UNIVERSITY OF ALBERTA LIBRARY
0 0001 6732 976

REPORT

OF

Alberta Coal Commission

1925



COMMISSIONERS:

H. M. E. EVANS
Chairman

R. G. DRINNAN

F. WHEATLEY

EDMONTON:
Printed by W. D. McLean, Acting King's Printer.
1926

Ex libris
universitatis
albertaensis



REPORT

OF

Alberta Coal Commission

1925

COMMISSIONERS:

H. M. E. EVANS
Chairman

R. G. DRINNAN

F. WHEATLEY

EDMONTON:
Printed by W. D. McLean, Acting King's Printer.
1926

LIBRARY
UNIVERSITY OF ALBERTA

Edmonton, February 15th, 1926.

To His Honour the Lieutenant Governor in Council:

We, the undersigned Commissioners, appointed by Your Honour by Commission bearing date the first day of December, 1924, beg leave to present our Report in pursuance of that Commission. This is divided into the following:

A. The Summaries,

(1) Summary of the Report,

(2) Summary of the Recommendations,

B. The Report in detail.

H. M. E. EVANS,
R. G. DRINNAN,
F. WHEATLEY.

Foreword by the Chairman

Of the three Commissioners signing this Report, one is a mining engineer, actively connected with several large collieries in the province; another is a practical miner who is no less active as a member of a mine-workers' organization and is President of the Alberta Federation of Labor; while the Chairman is free of any association with the industry. Recognizing at the outset the comparative futility of divided counsels, a Report has been produced that is unanimous. No doubt, certain of the findings of fact have been recorded and certain of the recommendations made, with unequal degrees of enthusiasm. No doubt, on occasions, some of the Commissioners might have been inclined to go farther in this or that direction. Perhaps, even now, they may differ in their estimate of the relative importance of various parts of their common conclusions. The whole object of this foreword, however, is to lay stress on the fact that it has been possible to agree on so much. In the Chairman's estimation, that general feature of this Report is, perhaps, more significant than any particular thing contained in it—more full of hope that the men of good will on both sides may combine to ensure that peace within the industry, which is incomparably its greatest need.

CONTENTS

A. THE SUMMARIES

PAGE

1. Summary of the Report 1
2. Summary of the Recommendations 16

B. THE REPORT

CHAPTER I. INTRODUCTORY 21

CHAPTER II. COAL RESOURCES AND OWNERSHIP 26

General Geology 26
Classification of Coal 27
Sampling and Chemical Analysis 29
Estimated Coal Resources 31
Ownership of Coal Resources 36

CHAPTER III. MINING DEVELOPMENT AND OUTPUT 41

Brief History 41
Abandoned Mines 42
Analysis of Mines by Output 46
Development in each Division and Coal Area 48
Form of Tenure of Coal and Surface Rights 54
Estimated Capacity of Present Alberta Mines 56
Output 58

CHAPTER IV. OPERATING CONDITIONS AND PRACTICE 62

Natural Conditions 62
1. Geological 62
2. Climatic 62
3. Means of Access 62
4. Roof Conditions 63
5. Floor Conditions 63
6. Gas Conditions 64

Operating Conditions 64
7. Methods of Work 64
8. Ventilation 65
9. Mechanical Haulage 65
10. Horse Haulage 66
11. Coal-cutting Machines 66
12. Mechanical Loaders 67
13. Timber Consumption and Supply 68
14. Personnel 75
15. Short Time Operation 77
16. Causes of Lessened Output 83
17. General Mining Practice 86
18. Comparison with Operating Conditions and Practice in Competing Fields 86
19. Suggestions for Improvement 88

PAGE

CHAPTER V. CAPITALIZATION AND PROFITS AND LOSSES.. 89
1. Chairman's Questionnaire 89
2. Capitalization 91
3. Cost Statements 92
4. Aggregate Profits and Losses—All Mines..... 95
5. Profits and Losses in Bituminous Mines..... 97
6. Profits and Losses in Sub-bituminous Mines..... 98
7. Profits and Losses in Lignite Mines..... 100
(*a*) Southern Group 100
(*b*) Central Group 101
(*c*) Northern Group 103
(*d*) All Lignite Mines 104
8. Revenues per ton 106
9. Costs per ton 108
10. Total Costs, Total Revenues and Net Profits and Losses per ton 110
11. Comparisons with Bituminous Mines of the United States 112
12. Dividends 113
13. Summary of Financial Results..... 114

CHAPTER VI. MARKETING 117
A. General Survey 117
1. Coal Consumption in Canada..... 117
B. Markets for Alberta Coal 119
2. General Survey of Alberta's Markets..... 119
3. Railway Market 120
4. Market in Alberta 130
5. Market in Saskatchewan 132
6. Market in British Columbia..... 133
7. Market in the United States..... 137
8. Market in Manitoba 140
9. Market in Ontario..... 149
C. Transportation 156
10. Freight Rates on Coal..... 156
11. Summer Tariff 157
12. Railway Weights 157
D. Marketing Methods in General 158
13. Storage of Alberta Coals 158
14. Summer Marketing 159
15. Quality of Coal and Preparation..... 159
16. Consumers' Preferences 160
17. Methods of Handling Sales 161
Wholesalers 161
Retailers 161
18. Distress Coal 163
E. Co-operative Marketing 164
19. Souris Pool 164
20. Other Pooling Arrangements..... 166
21. Co-operative Marketing of Alberta Coal..... 166
F. Competition 170
22. United States Coal 170
23. Saskatchewan Lignite 170
24. Coke 170
25. British Coal 171
26. Hydro-Electric Power 171

CHAPTER VI. MARKETING—*Continued.*

PAGE
27. Wood 171
28. Natural Gas 171
29. Oil 174

G. Methods of Use and By-Products 174
30. Power Stations at Coal Mines 174
31. Pulverized Coal 174
32. Carbonization and By-products 175
33. Briquetting 176

CHAPTER VII. MINE WORKMEN AND LABOR RELATIONS 178
A. Composition of the Working Force 178
1. Numbers Engaged 178
2. Nationalities 179
3. Classification of Mine Workmen 182
4. Too Many Mine Workmen 182

B. Operators' Organizations 184
5. Western Canada Coal Operators' Association 184
6. Northern Alberta Coal Operators' Association 188
Need for Operators' Organizations 188

C. Labor Organizations 189
7. U.M.W. of A., District 18 189
8. Edmonton and District Miners' Federation 193
9. Mine Workers of Canada 193
10. Red Deer Valley Miners' Union 193
11. Industrial Workers of the World 194
12. One Big Union 194
13. Non-Union Workmen 194

D. Wages, Working Conditions and Agreements 195
14. Agreements, Western Canada Coal Operators' Association and District 18, U.M.W. of A. 195
15. Wages Changes 1909 to 1925 196
16. Memorandum Regarding New Agreements 201
Management of Mine Clause 202
Clause Regarding Union Affiliation and Check-off. 203
Settlement of Local and General Disputes 206
Duties of Pit Committee 207
New Work 208
Minimum Rate—Miners Taken to do Company Work 209
Overtime 209
Preference of Employment 209
Wet Places 210
Contract Rates 210
Comparative Statement of Day Wage Schedules . . 211
17. Edmonton and District Miners' Federation 214
17*a*. Sundry Wage Agreements 215
18. Variations in Agreements and Wage Differentials. 215
19. General Discussion of Agreements 217
20. Non-union Wages and Working Conditions 220
21. Wages in Excess of General Scale 221
22. Comparison with Mining Wages Elsewhere 221
23. Comparison with Wages in Other Occupations 222
24. Payment Fortnightly or Semi-monthly 223
25. Non-payment of Wages 223

CHAPTER VII. MINE WORKMEN AND LABOR RELATIONS—
Continued. PAGE

E. Sundry Wage and Working Conditions 224
26. Minimum Wages 225
27. No Contract Rates 226
28. Method of Payment of Contract Men 227
29. Deadwork 228
30. Length of Working Day 229
31. Multiple Shifts 230
32. Working Overtime 230
33. Man Trips 230
34. Over-crowding 231
35. Inexperienced Workmen 231
36. Absenteeism 232
37. Sundry Special Customs 233
38. Bone in Coal 233
39. Lamps 233
40. Weights 233
41. Wash-houses 234
42. Spare Link 234
43. The Caveling System 234
44. Labor Turnover 235
45. General Service 235

F. Irregular and Seasonal Employment 235
46. Extent of Problem 236
47. General Labor Situation in Alberta 238
48. Suggested Remedies for Irregular Employment 239

G. Earnings 242
49. Earnings of Day Men per Shift 242
50. Earnings of Contract Miners per Shift 243
51. Average Earnings of Mine Workers per Shift 245
52. Annual Earnings of Mine Workers 248

H. Cost of Living 251
53. House Rents 252
54. Room and Board 253
55. Cost of Living Budgets 254
56. Cost of Living in Closed Camps 259

I. Living and Housing Conditions 259
57. General Summary of Conditions 260
58. Housing Recommendations 261
59. Water Supply Recommendations 263
60. Sanitation Recommendations 263
61. General Plan 263

J. Education 264

K. Strikes and Conciliation 267
62. History of Strikes in Alberta 267
63. Pithead Strikes 268
64. Strikes for Recognition of the Union 270
65. Strikes over Main Agreement 270

CHAPTER VIII. LEGISLATION AND GOVERNMENTAL ACTIVITIES 274

A. Alberta Mines Act and Branch 274
1. The Mines Act of the Province of Alberta 274
Hours of Labor 275
Register of Hours Worked 275
Provisional Certificates 275
Payment of Wages Fortnightly 276

CHAPTER VIII. LEGISLATION AND GOVERNMENTAL ACTIVITIES —*Continued.*

PAGE
Payment by Weight or Measurement 276
Check Weighman 276
Removal of Check Weighman 277
Operators' Monthly Returns 277
Mines Inspectors 277
Coroners' Inquests 277
Ventilation 278
Safety Lamps 278
Ambulances, etc. 278
Wash-houses 278
Workmen's Inspection Committee 278
Fire Boss 279
Shot Firing 280
Timbering 280
Power to Make Regulations 280
Non-payment of Wages 280
Arrangement of Mines Act 281
2. Suggestion for Certificate of Competency 282
3. Regulations of the Mines Branch 283
Recording Gauges 283
Wash-houses 283
Emergency Hospital 283
Electrical Regulations 283
Exemptions 283
4. Alberta Mines Branch 283
B. The Workmen's Compensation Act and Board 286
5. The Workmen's Compensation Act (Accident Fund) of the Province of Alberta 286
Constitution of the Board 286
Jurisdiction of the Board 287
Power to Make Regulations 287
Assessment 288
Various Powers of Board 288
Separate Accounts and Demerit Ratings 288
Conditions of Compensation 288
Waiting Period 288
Notice of Accident 290
Death 290
Permanent Total Disability 290
Permanent Partial Disability 290
Disfigurement Allowance 290
Temporary Total Disability 291
Temporary Partial Disability 291
Average Weekly Earnings 291
Maximum Compensation 293
Minimum Compensation 294
Medical Aid 294
Industrial Diseases 294
Notice of Accidents 294
Persons to Whom Act Applies 294
6. Regulations of the Workmen's Compensation Board 295
Accident Prevention Committee 295
Demerit Ratings 295
7. Scale of Compensation 296
Comparison with U.S.A. 302
Comparison with Other Provinces 302

CHAPTER VIII. LEGISLATION AND GOVERNMENTAL ACTIVITIES —*Continued.* PAGE

8. Suggested Return to Flat Rate Basis 304
9. Workmen's Compensation Board 305
10. Accidents in Alberta Mines 306
11. Suggested Provincial Health Service 309
12. Group Insurance 310
13. Mine Rescue Work 310

C. Other Alberta Acts 311
14. Alberta Coal Sales Act 311
15. Alberta Mine Owners' Tax Act 312
16. Alberta Public Health Act 313

D. Other Provincial Activities 313
17. The Scientific and Industrial Research Council 313
18. Alberta Trade Commissioner's Office 316
19. Alberta Labor Commissioner 316

E. Dominion Government in Relation to Alberta Coal 317
20. Mining Regulations 317
21. The Industrial Disputes Investigation Act 320
22. Customs Duty on Coal 320
23. Anti-Dumping Provisions 321
24. Dominion Subsidy 322

F. General Recommendations for Provincial Government Action 322
25. Department of Mines of the Province of Alberta 322
26. Coal Industry Advisory Council 324
27. Permanent Coal Commission Not Recommended 325

CHAPTER IX. SUNDRY PROBLEMS 326

A. Over-development 326
1. Extent of Over-development 326
2. Evils of Over-development 327
3. Causes of Over-development 327
4. Suggested Remedies 327
5. Recommendations re Over-development 329

B. Small Mines 332

C. Amalgamations of Mines 333

D. Nationalization 335

LIST OF APPENDICES

APPENDIX I. Commission, dated 1st December, 1924.

II. Mines of Alberta in operation in 1924, by Divisions and Coal Areas, showing output 1923 and 1924.

III. Forms of Questionnaires (not printed).
1. General to Operators.
2. Chairman's to Operators.
3. To Local Unions.

IV. Abstract of Replies to General and Union Questionnaires (not printed).

V. Evidence at Sessions (with Exhibits) (not printed).

VI. Disposition of Output by Character of Coal and Divisions for years 1917-1925.

VII. Department of Health Reports on Coal Mining Communities (not printed).

VIII. Maps of C.P.R. and C.N.R. showing Origin of Coal used on Various Portions of those Railways (not printed).

IX. Coal Prices (not printed).

X. Dominion Government Coal Mining Regulations—full set since leases first granted (not printed).

XI. Detailed Maximum, Minimum and Average Costs and Revenues of certain reporting Bituminous and Lignite Mines.

XII. Earnings of Mineworkers for 1921-1924.

XIII. Bibliography.

LIST OF PLATES

PLATE I. Map of Province of Alberta, showing Coal Areas and Coal Mining Divisions (not printed).

II. Charts of Coal Shipments and Production by Months.

III. Chart of Monthly Outputs and also Yearly Operation according to Percentages of full Capacity for Certain Mines.

INDEX

Alberta Coal Commission

A—THE SUMMARIES

1. SUMMARY OF THE REPORT

The summary of the Report follows the order of the chapters and sections and can be little more than an annotated table of contents. The summing up must omit many of the essential facts; and the Report itself should be consulted for anything that may seem to require explanation.

CHAPTER I. INTRODUCTORY

This chapter discusses the terms of reference to the Commission and the scope of its inquiry. For the purpose, the forty-four "coal areas" of the province were grouped into thirteen coal mining "Divisions," details of which are given. Questionnaires were sent out; public sessions held and sworn evidence taken; and other witnesses appeared at informal sessions. Mines and mining communities were visited. Grateful acknowledgement is made to all those who rendered assistance.

CHAPTER II. COAL RESOURCES AND OWNERSHIP

The account of the geology of Alberta coal given in this chapter cannot be further condensed. It is important to note that the "maturing" of coal, in Alberta, appears to be due much more to the pressure from the upthrust of the Rockies than to mere lapse of time. In many Alberta coal areas, the youngest seam at a westerly point is superior to the oldest seam at an easterly point. Alberta coals are Cretaceous in age and are much less regular in occurrence than Carboniferous coals. The sampling, analysis and the classification and nomenclature of Alberta coals are discussed.

The hitherto accepted estimates of coal resources are examined; and it is concluded that, in the light of present knowledge, these estimates must be discarded and much more moderate figures substituted. Even allowing something for similar reductions elsewhere, it will more nearly represent the latest information to say that Alberta, probably, has three per cent and not fourteen per cent of the world's coal resources. Even so the reserve is enormous. An estimate of the coal reserves was secured, for the purposes of this Report, on the basis of restricting the

definition still further and including only coal seams two feet and over in thickness, within one thousand feet of the surface, omitting also certain large areas, because of lack of knowledge and because these areas are not, at present, provided with transportation facilities. This estimate is given in detail by character of coal, mining divisions and coal areas. To repeat, it is not put forward as an estimate of the total coal resources of the province but was obtained, mainly, for the purposes of inquiry into the ownership of that part of the total resources, which might be considered to have practical importance. The totals of this limited estimate are thirty-one and a half billion tons of bituminous coal; eleven and a half billion tons of sub-bituminous coal; and fourteen and a half billion tons of lignite coal; in all fifty-seven and a half billion tons. Cutting these figures in two to allow for local failures and faultings, as well as losses in mining, sufficient still remains to continue the highest annual output yet reached, at the same rate, for about four thousand years.

An approximation to the ownership or control of the coal rights included in this limited estimate is given by character of coal, coal mining divisions and coal areas. Always bearing in mind that this can only be an approximation, the control at the present time is summed up as follows: bituminous coal, as to sixty-four per cent, by the Dominion Government; as to sixteen per cent, by mine operators; as to one per cent, by large land companies; and as to nineteen per cent, by others. For sub-bituminous coal, the percentages, in the same order, are sixty-three per cent, ten per cent, six per cent and twenty-one per cent. For lignite coal, they are forty-five per cent, eleven per cent, twenty per cent, twenty-four per cent; making for all coals, as to sixty per cent, Dominion Government; as to fourteen per cent, mine operators; as to five per cent, large land companies; as to twenty-one per cent, others. "Control," as used above, includes leases as well as ownership in fee simple. The coal controlled by the respective classes may be expected to differ in practical economic importance, because a process of selection has been at work to some extent.

CHAPTER III. MINING DEVELOPMENT AND OUTPUT

A brief history is given showing that, up to the end of 1924, according to the records, over one thousand "mines" had been opened in the province, of which two-thirds had been abandoned. Estimates are quoted giving in detail, by years and coal areas, the amount of money invested in mines that were so abandoned, the total being nearly twelve million dollars. The aggregate capacity of these mines at the time of abandonment was estimated at sixteen thousand tons a day. An analysis is made for the year 1923—the last normal year—of the mines then operating, according to their output and according to character of coal. Of the twelve bituminous mines, nine produced over two hundred thousand tons each and were responsible for about ninety per cent of the output. Of the 28 sub-bituminous mines, two produced over one hundred thousand tons each and, together, five-

eighths of the total. Of the 321 lignite mines, 27 with over fifty thousand tons each produced nearly eighty per cent of the total output. Including the 21 lignite mines producing from ten to fifty thousand tons a year, 48 lignite mines produced over nine-tenths of the total. For all kinds of coal, 69 mines or less than one-fifth of the number produced over ninety-five per cent of the output; and thus constituted the real coal industry of the province.

A short account is given of the mining development in each coal area of each division; and an analysis is made of the form of tenure by operating companies of both coal and surface rights. The daily capacity of the present Alberta mines is estimated; the bituminous, about twenty-four thousand tons, the sub-bituminous, over four thousand tons, and the lignite, over twenty-one thousand tons. or a total of nearly fifty thousand tons a day. Allowing for seasonal operation of the sub-bituminous and lignite mines, this would correspond to an annual capacity of ten million tons, about half as much again as the biggest output yet reached. The capacity of the present mines could be very rapidly increased. Detailed tabulations are given, for reference, of the total output by years, since 1886, and of the output by character of coal and coal mining divisions, since 1917.

CHAPTER IV. OPERATING CONDITIONS AND PRACTICE

The table of contents will show the headings under which the subject matter of this chapter is treated, both the natural and the operating conditions being included. The roof, floor and gas conditions of each division are described briefly. Bad ventilation is thought to be a feature in some lignite districts but is discussed more fully in a later chapter. Among labor-saving devices, particular attention is paid to mechanical loaders and the peculiar circumstances affecting their use here. It is concluded, however, that their increased use is vitally important. Timber supplies and consumption are discussed at length, so as to direct attention to them. References are made to reforestation and to timber testing experiments here and the results of similar work elsewhere. Tables are given of the production, per employee per shift, in the various classes of mines in the province; and for comparison, similar, but more comprehensive, tabulations are taken from the Report of the United States Coal Commission. A great deal of attention is paid to the highly important subject of short time operation, its exact extent in the various groups of mines and its causes. Detailed records are given for representative mines in each group. The best general idea on this subject can be obtained by examining Chart No. III; and the full text (Sections 15 and 16) should also be consulted. Table 31 shows the four years' unweighted average of the mines examined as ninety-one days' operation at four-fifths to full capacity; thirty-one days at three-fifths to four-fifths; twenty-three days at two-fifths to three-fifths—in all 145 days at two-fifths capacity or better; while the average of complete idleness was 138 days in the year. For the reasons given, comparison with records elsewhere is difficult; but a table is included of the

days worked, for the years 1901 to 1918, in the chief coal-producing countries of the world. The causes of lessened output, in each of the four years 1921 to 1924, are examined by character of coal, under such headings as lack of orders, of labor and of railway cars, labor disputes, absenteeism, etc. This part can hardly be further summarized. Each of the causes is treated at length elsewhere in the Report; for example, lack of orders under "Markets" in Chapter VI, labor causes in Chapter VII and some general problems in Chapter IX.

Chapter IV concludes with a brief comparison of operating conditions and general standards in mining practice, here and elswhere, and endorses the opinion, expressed by many operators, that there is much room for improvement.

CHAPTER V. CAPITALIZATION AND PROFITS AND LOSSES

This chapter, after dealing with the method of inquiry and explaining the treatment of the accumulated material and the relative completeness of the reporting base, gives the results in a series of tables which cannot be further condensed. It would be unwise to attempt to sum up any of the explanations, because of the danger of leaving out some essential part and so conveying an incomplete impression. For a rapid survey, the tables may be looked at, as well as the detailed statements in Appendix XI. Section 13 of Chapter V is, itself, a summary of the financial results, winding up with a caution against drawing hasty conclusions from them.

CHAPTER VI. MARKETING

The table of contents will provide a ready reference to any particular market in which the reader may be interested. Chart II shows, in graphic form, the shipments month by month, since January, 1917, of Alberta coal for consumption in the various markets and the corresponding monthly total production. This chart will thus give the best general idea of the past history of the respective markets. Appendix VI gives, year by year since 1917, and by character of coal the shipments from each division to each market. Taking the totals for 1923, the latest year approaching the maximum production, and using round figures, Alberta coal went, forty-five per cent to railroads; twenty per cent to Alberta; eighteen per cent to Saskatchewan; eight per cent to Manitoba; four per cent to colliery boilers; and the remaining five per cent to all other markets.

Railway Market: The railway market is by far the most important single market and the outlook in it is encouraging. Alberta coal is now reaching a wider territory on both railways than ever before; the full benefit of which is yet to be felt by the operators and workmen of the mines concerned. The factors governing the monthly variations in deliveries, as well as the elements entering into the future prospects, are discussed at some

length. Granted the prime essential of peace in the industry, so as to ensure regularity of supply, and provided something can be done about over-development (Chapter IX), at least to the extent of seeing that the condition is not further aggravated by the opening of unnecessary new mines, the railways and the mines supplying them should be able to systematize deliveries, so as to bring about a very sound condition in this part of the industry. The demand for railway coal is greatest in the summer and least in the winter, thus dovetailing exactly into the demand for heating purposes and suggesting an orderly migration of workmen between the respective classes of mines, within the province.

Market in Alberta: The home market is disturbed by the operation of the multitude of small mines and suffers from the competition of natural gas. Improvement will come chiefly with increase of population and industries.

Market in Saskatchewan: This province, already, takes almost as much coal as Alberta itself and should afford a stable and growing market. Competition from the Souris mines will always be felt in the immediate vicinity of those mines, namely, in the south east corner of Saskatchewan. As to the distribution of business throughout the year, the Saskatchewan market appears to be even more highly seasonal than Alberta itself.

Market in British Columbia: Sales in British Columbia have so far been less than one-tenth of the home consumption or the shipments to Saskatchewan. Many hopes have been entertained of an outlet from Alberta mines as bunker coal on the Pacific coast. For the reasons given, Alberta's best chance appears to be at Prince Rupert, as shipping at that port develops, and when bunkering facilities are provided. For a bunker trade at Vancouver, Alberta coal enjoys certain advantages; but it would require some reduction from the present freight rates to secure business; and, even so, the competition of mines in British Columbia, much closer to Vancouver, would be very severe. This latter statement holds true of the general steam market in Vancouver; but, for the domestic market in that city and for all interior points, there are prospects of increasing the sale of Alberta coal.

Market in United States: In general, sales of Alberta coal to the United States have declined rapidly since 1920 and prospects are not very bright for recovery. In Seattle, the competition from coals much nearer than Alberta seems to preclude the prospect of developing business for our mines. In Spokane, the chances are better, the freight from Drumheller, for example, being less than the freight to Winnipeg. Some witnesses were distinctly impressed with the possibilities in Spokane. Others were much less hopeful saying that this market is even more of a dumping ground for various coals than Winnipeg. Some years ago, Alberta coals had quite a market in Northern Montana, which they lost through increases in freight rates and through the building of new railway lines, tapping American sources of supply. The North Dakota market seems to offer some opportunities for expansion.

Market in Manitoba: This is pre-eminently the market that should be captured, in its entirety, for Alberta coal, save only for such competition, as lower mining and transportation costs may enable the Saskatchewan lignites to offer, in that part of the market for which such coals are used. Yet, while sub-bituminous shipments are increasing, lignite coal is not holding its own; and the bituminous shipments have fallen off very badly. The course of Alberta's trade, both in the steam and domestic markets, competition in those markets, the marketing difficulties and other peculiarities of the situation are set out at length. To enable Alberta to double its shipments to Manitoba, which it should easily do, one of the first requirements will be proper protection against the dumping of American coal and coke (see Chapter VIII). Another prime essential is co-operation among the Alberta producers, to do away with marketing anomalies and dealers' difficulties and to offer a united front to the well-organized American coal trade. Many thought that a determined effort by Alberta mines would soon persuade the American operators to acknowledge defeat and thus discontinue dumping and cut-rate tactics. The case seems strong for a general reduction in freight rates to Manitoba and a special summer freight rate should be of assistance. Many suggestions were made which cannot be repeated in this summary. The conclusion is that the entire market in Manitoba belongs to the coals of Saskatchewan and Alberta and that none should rest content, until it is secured.

Market in Ontario: This part of the report was finished before the recent proposal whereby the Dominion, Ontario and Alberta Governments are to join in guaranteeing to the railways any excess in cost over a seven dollar rate; should such excess be proved to exist, after the approaching examination by the Railway Commission. The history of the Ontario campaign and the features of that market are discussed at some length. It has not yet been proved, to the satisfaction of this Commission, what price relation the various Alberta coals can maintain in a normal Ontario market or that a seven dollar freight rate is the correct one. At the beginning of what all hope will prove a tremendous market for Alberta coal and achieve fuel independence for Canada, it is most desirable to avoid any aggravation of peak load conditions for either mines or railways. In their respective degrees, the railways and the mines, alike, already suffer from over-development; and the railway employees, like the mine workmen, from seasonal unemployment. What is wanted is a balancing of the traffic and the business. The suggestion, therefore, is that, as a first step, railways, mines and Governments should combine to effect large scale summer shipments to Ontario at such prices as will induce the consumer to take delivery at that time. Depending on the season and the railways' programme, the time for such shipments would be somewhere from 1st April to 15th August. The amount which could thus be transported in the railways' slack time has been variously estimated at 350,000 to 500,000 tons. Thus the market can be developed and proved without additional capital expenditure by railways or mines and without increasing the peak numbers of the working force, with

the concomitant of unemployment, later on. It would, also, be highly desirable for the next and all subsequent stages of the Ontario market to maintain such a relation between prices and freight rates, as will preserve the balance between shipments in the summer and those in the autumn and winter. With even more force than in the Manitoba market, operators are urged to make a combined campaign in Ontario, giving particular care to the selection of coals and their preparation. The Governments that are giving their assistance to this movement will have a right to supervise it.

Transportation: This chapter next deals very briefly with the matter of transportation, pointing out that, in view of the approaching hearing before the Railway Commission, this Commission could not go fully into such matters. However, many witnesses pressed for reductions in freight rates, pointing out in particular that coal, as a bulk cargo of lower value and, so far as Alberta was concerned, of greater tonnage, had a claim for its rates to be made lower than those on wheat. The question of summer tariff, already referred to in the Manitoba and Ontario markets, was again discussed as a help to overcome summer slackness in the domestic coal industry. Difficulties with railway weights are pointed out but are left to the shippers, the railways and the consignees to adjust.

Marketing Methods: Marketing methods, in general, are discussed under such headings as storage, summer marketing, quality of coal and preparation, consumers' preferences, methods of handling sales, etc. Dealers' problems and charges are explained; the chief hope of remedying whatever is amiss seeming to lie in some form of co-operation between mines, which leads to the next subject.

Co-operative Marketing: As the most complete example in somewhat similar circumstances a full description is given of the pool now existing in the Saskatchewan lignite field. Arguments are given in favor of an Alberta pool, as well as the arguments against and some alternative proposals; and the conclusion is reached that, while not a remedy for all the ills, co-operative marketing should result in considerable economies as well as in increased efficiency. As to the number of pools, in the lignite field alone, there would probably have to be at least three; northern, central and southern. The most urgent needs are for co-operative methods in the Manitoba and Ontario markets, before attempting to control the business nearer home. In any case, the pools should undertake the retailing of coal, if at all, with very great caution.

Competition: The competition, which has already been discussed under each market, is summed up in a division of the chapter under such headings as United States and Saskatchewan mines, coke, oil, hydro-electric power, with a very full account of the competition in the home market from natural gas, which is expected in the very near future to displace 375,000 tons of coal a year.

Methods of Use and By-Products: The next division of the chapter deals with methods of use and by-products, the subjects treated being power stations at coal mines, pulverized coal, carbonization and by-products and briquetting. Low temperature carbonization, about which much has been published is found to be still in the experimental stage. Huge sums have been spent on it; and the conclusion is that Alberta can very well wait until the low temperature process has been commercially proved elsewhere.

CHAPTER VII. MINE WORKMEN AND LABOR RELATIONS

Many of the details given in this chapter will be of interest chiefly to mine operators and workmen. After dealing with the number, nationalities and classifications of mine workmen in the province, it is concluded that there are too many endeavoring to follow mining as a means of livelihood. The present lower scale of wages may correct this condition. The various organizations of operators and of workmen are described and the constitutions of the two chief bodies—the Western Canada Coal Operators' Association and District 18 of the United Mine Workers of America—are summarized, article by article. Under Wages, Working Conditions and Agreements, a full list is given of the various agreements between the two organizations just mentioned and also the wage changes from 1909 to 1925, with a brief account of the negotiations accompanying these changes. As an example, the rates of pay for miners on day work have been as follows: 1909, $3.00; 1911, $3.30; August, 1916, $3.55; November, 1916, $3.84; April, 1917, $4.08; August, 1917, $4.28; December, 1917, $4.42; April, 1918, $4.62; August, 1918, $4,87; December, 1918, $5.00; December, 1919, $5.70; April, 1920, $6.35; October, 1920, $7.50; October, 1924, $6.56; April, 1925, $5.40. There follows a quite complete memorandum of all the agreements now in force at the chief mines in the province, analyzed under the various provisions of those agreements, with the full scale of the present wages.

Of greater public interest will be the discussion on variations in agreements between districts, on wage differentials between jobs in the mine and on agreements generally. To begin with, these very important documents appear to the Commission to fail in clearness of expression. Indeed, it would seem that at times the ambiguity has been intentional. The advantages cannot be over-estimated of having agreements so definitely and clearly expressed that no dispute can possibly arise as to their meaning in any particular. Owing to the present agreements having for the most part been made by individual mines and not by associations, there is considerable lack of uniformity in the wage scales and working conditions; and this situation is thought by some to portend a troublesome readjustment, some time in the future. The information as to non-union wages and working conditions is very incomplete and suggestions are made for supplementing it.

Comparisons are then made with mining wages elsewhere and with wages in other occupations in the province. It is almost impossible to keep abreast of changes in wage rates but, at the time the information was compiled, the Alberta scale, in the mines that formerly had an agreement with the U. M. W. A. District 18, was a little higher than British Columbia, much higher than Nova Scotia and Tennessee and Kentucky but much lower than Montana, Wyoming, Washington and the mid-continental field in the United States, which includes Illinois, Indiana, Iowa, Ohio and West Pennsylvania. Compared with the scale in other trades in the province, mining wages, for the last five years, have shown the most rapid decrease; and now seem to be more on a parity with other occupations, except in respect of unclassified mine labor, which is still paid considerably more than general common labor. The chapter then contains a brief consideration of a great variety of matters, each a frequent cause of difficulty in adjusting and maintaining the relationship between operator and working force on a good footing, and, in the aggregate, giving some idea of the complexity of that relationship. To quote from the Report:

> "What the Commission wishes to emphasize above all is the supreme importance to that peace within the industry, which is its prime need, of so managing the day to day relationship as to reduce to a minimum the friction and discontent over these conditions. Too often they are disregarded and disputes concerning them allowed to accumulate. It is just this accumulation of comparatively petty grievances that adds the bitterness to the periodic struggle over the making of a new agreement. If everything else could be disposed of currently and nothing left to be determined in the new agreement but the rate of wages, there would be far more chance of a dispassionate and prompt settlement of that major item."

A mere list of the subjects dealt with in this part of the Report will indicate the ground covered: Payment Fortnightly or Semi-Monthly; Non-Payment of Wages; Minimum Wages; Contract Rates; Method of Payment of Contract Men; Deadwork; Length of Working Day; Multiple Shifts; Working Overtime; Man Trips; Over-Crowding; Inexperienced Workmen; Absenteeism; Sundry Special Customs; Bone in Coal; Lamps; Weights; Wash-Houses; Spare Link; The Caveling System; Labor Turnover. This part winds up by stressing the importance of good general service to a man working in the mine, in the way of supplying timber and mine cars, the right kind of powder, ventilation, drainage, etc.

Part F. of this chapter is occupied with the crucial problem of irregular and seasonal employment. This is the workman's side of the short time operation described in Chapter IV and tables are repeated, in summary form, to show the extent of the problem. It would be bad enough if the days idle and the days worked were segregated into separate parts of the year but, instead, they intermingle throughout all the months. This is especially the case in the bituminous mines. In most lignite

mines, there is true seasonal employment. As a background to this problem, the general labor situation in the province is outlined. While the situation in this regard is undoubtedly difficult, it is by no means hopeless. The problem must be attacked in two main ways; first, to remove the cause by seeking new markets, such as the summer market in Ontario and Manitoba; by stopping further over-development; by co-operative methods to regularize delivery; in fact by applying all the means for the stabilization of the industry, which have suggested themselves in the course of this inquiry. The second line of attack should consist in organizing migrations of the working force back and forth between the bituminous mines and the lignite mines and harvest fields; and also between the lignite mines and the farms and other summer employment.

Parts G. and H. of this chapter are on Earnings and Cost of Living, respectively, and, like the chapter on the Operators' Profits and Losses, can hardly be further summarized. For the mine workman, high wage rates multiplied by irregular employment have yielded only moderate annual earnings. The official Union cost of living budget of a little over $1,800.00 a year has not, in practice, been equalled by the average earnings for the four years examined.

In Part I. on Living and Housing Conditions, after a general survey from which it concludes that the present state of things is far from satisfactory, the Commission lays down the minimum that it thinks should be insisted on. This makes allowance for the first year or so in a new camp but, thereafter, gives in detail the standard for housing accommodation, water supply and sanitation. All present mining communities should be made to conform to this standard by some such machinery as that of the Town Planning Act. The Commission cannot too strongly express its views that the plea of pioneering conditions should now be disregarded. It is time that the minimum requirements of health, decency and comfort should be enforced on all without discrimination.

In Part J. on Education, it is recognized that peculiar difficulties are occasioned in mining communities by the winter peak in the numbers of school children due to the seasonal employment. Here again, anything which tends to spread the operations more uniformly throughout the year will be of great advantage. For the rest, the question of education in mining communities is part of the general educational problem of the province. Incidentally, however, the migrating force of workmen, already referred to, should consist chiefly of the single men, leaving to the married men with homes and families all the available steady work in each camp.

Part K. on Strikes and Conciliation might have been extended to almost any length. A very brief history of strikes is given, pointing out, incidentally, that, owing to the irregularity of employment that is normal to the province, it is quite impossible to estimate the total loss in working days or the total loss in wages that can be attributed to the strikes. However, the dam-

age that has been done is very great. As the figures given in this Report conclusively prove, the coal industry, as a whole, for the four years 1921 to 1924, would, but for the strikes, have realized a fair profit; and the average earnings of workmen would have come much nearer reaching the budget which they have laid down as the minimum.

In theory, there should be no pithead strikes and, in reality, there have been a great many. The machinery for adjusting the minor matters which cause these strikes is well designed; and all that remains is to use it. Anything more elaborate, following such models as the Adjustment Board of the railways, is out of the question here, unless and until both operators and men form province-wide and well disciplined organizations. Even that Adjustment Board does not attempt to deal with wages; but it does handle promptly and effectively all minor matters.

The concluding pages of Chapter VII deal with strikes over the main agreement and various plans for obviating them or minimizing their effects. This part can hardly be further condensed.

CHAPTER VIII. LEGISLATION AND GOVERNMENTAL ACTIVITIES

This chapter takes up first the Mines Act and the Mines Branch. After recording the almost unanimous commendation of the main features of the Act, a number of suggested changes are examined in the order of the sections of the Act and of the regulations to which they pertain. The conclusions of the Commission are given in the Summary of Recommendations, the most important having to do with Inspection Committees of Workmen, the non-payment of wages and certificates of competency. The enforcement of the Act and the inspection of mines under it were more generally criticised. The conclusion is reached that the time has come when the coal industry of Alberta must be considered as having passed out of the stage of allowances for pioneer conditions and when the various provisions of the Act should be enforced or repealed, if found unworkable.

In respect of the Workmen's Compensation Act and the Workmen's Compensation Board, many operators testified that the original Act had been welcomed, as something equally beneficial to the workman and the operator; but they complained of the changes made since. A number of possible amendments to the various sections of the Act and to the regulations are considered in numerical order. So far as the coal mining industry is concerned, the power of the Workmen's Compensation Board to make safety regulations is found to conflict with similar provisions in the Mines Act; and it is concluded that there must be single control in this matter. A partial analysis is made to show the predominance of shorter term disabilities and the consequent importance of the statutory waiting period before compensation begins. The difficulty is recognized of arriving at "average weekly earnings," 62½% of which is the compensation in cases of permanent or temporary total disability; but it seems very question-

able whether the method adopted by the Board is the one best calculated to give effect to the expressions used in the Act. This question is discussed at considerable length (under Section 56 of the Act) and one solution seems to be a return to the flat rate basis of compensation. The demerit ratings, which have been imposed recently by Resolution No. 11, are thought to be vexatious out of all proportion to the revenue obtained. These demerit ratings are not based on inspections and have no ascertainable relation to the safety precautions taken. It seems, therefore, doubtful whether this particular regulation conforms to the Act.

Changes in the scale of compensation, since 1918, are summarized, showing very great increases. Comparative tables give the chief provisions of the compensation laws of various coal mining states and of other Canadian provinces. Alberta is undoubtedly in advance of most other compensation legislation in the shortness of the waiting period, the amount of compensation payable, the maximum and minimum weekly payments, etc. Perhaps arising chiefly out of the discontent with the calculation of average weekly earnings already referred to, there is a general desire for a return to the flat rate basis.

Statistics are given as to the Compensation Board's revenues, expenses, rate of assessment, etc. The assessment has increased from one and one-half per cent of the payroll, in the years 1919 to 1921, to two and a quarter per cent, in 1922, and three per cent, since then. The number of accident claims seems very large; but, in the absence of reliable figures of the average number of men employed here, no useful comparison can be made with the statistics in other places. Incidentally, the huge discrepancy between the number of accidents reported to the Mines Branch and those reported to the Workmen's Compensation Board, respectively, seems not to be adequately accounted for by the difference in the statutory basis for reporting.

Complaints as to rulings of the Compensation Board on individual claims do not appear excessive, having regard to the inherent difficulties. The employment by the Board of its own accident doctors, on a full time basis, would probably make for economy. Mine rescue work, which comes under the Compensation Board, is treated briefly.

The Alberta Coal Sales Act, which went into force on the 10th April, 1925, is designed to regulate the coal trade, so as to prevent substitution and other improper practices. Trade names have been registered under the Act and inspectors appointed; but so far there have been no prosecutions; and it is too early to decide whether or not the Act will accomplish the purpose for which it is intended.

Under the Mine Owners' Tax Act the various stages of the tax on operators are reported. The actual tax collected is, for the most part, at five cents a ton and not the two per cent of gross revenue fixed by the Act and the Order in Council passed under it.

In the Alberta Public Health Act, the machinery exists for supervision of such matters. It is thought that there should not be the present division of responsibility between the Sanitary

Inspectors and the ordinary Mines Inspectors; and that, in general, it is time that a much higher standard was set and enforced.

The constitution and work of the Scientific and Industrial Research Council are discussed at some length. It must be recorded that there has in the past been an unfortunate lack of sympathy and co-operation between the Council and the operators of the province, which has militated against the best results; and a recommendation is made (see Summary of Recommendations), which should make for improvement in this regard.

The Alberta Trade Commissioner's Office and the work of the Alberta Labor Commissioner have been treated in the chapters on Marketing and Labor Relations, respectively.

Under the heading of the Dominion Government in Relation to Alberta coal, the history and present form of the mining regulations are considered in some detail. There has been a progressive increase in the degree of control which the Government may exercise over mining operations under the leases. In the result, a lack of uniformity exists to a certain extent; but nothing effective can be done about this until the old leases begin to expire. The general policy, which the Commission thinks should govern the granting of future leases, is outlined more fully in the next chapter. Meantime, certain recommendations are made which appear in the Summary of Recommendations. The Industrial Disputes Investigation Act of the Dominion is taken up in Chapter VII.

As to the duty on coal, it is found that the recent change, from fourteen cents a ton on slack and fifty-three cents a ton on other bituminous coal to a flat rate of fifty cents a ton on all bituminous coal, while it stopped the practice of shipping separately and remixing, has, on the whole, tended to the disadvantage of the Alberta producer and has resulted in a direct loss of revenue to the Dominion Government. Increased duties will be of great assistance and should be urged on the Dominion Government, at least to the extent necessary to give the mines of Alberta and Saskatchewan the entire market in the three prairie provinces.

An account is given of the differences between the Canadian and the American anti-dumping laws and enforcement, which make the former so much less effective, and the request of many witnesses for redress in this connection seems to be in order.

The chapter concludes with two of the most important recommendations made by the Commission, which should be examined in detail (Sections 25 and 26). These cover the formation of a Department of Mines of the Province of Alberta to be assisted by a Coal Industry Advisory Council. Meantime, the alternative plan of a permanent Coal Commission is not recommended, for the reasons given in Section 27.

CHAPTER IX. SUNDRY PROBLEMS

Two-thirds of the coal mines that have been opened in Alberta have been abandoned, with heavy loss; but the third still remain-

ing has a capacity, even on the basis of seasonal operation for the sub-bituminous and lignite mines, that is at least one and a half times the present demand. That capacity, moreover, could be very rapidly increased, without adding any new mines. This condition of over-development shows no tendency to right itself. The bituminous mines are not numerous but, in the aggregate, have about double the required capacity. In the lignite field, in addition to over-development in aggregate capacity except for the peak of the seasonal demand, the excessive number of openings is the feature. Over-development results in low earnings and hardship for the workmen, in spite of high wage rates, loss of capital, high costs of coal and loss of markets, thereby compelling still higher costs and more loss of markets, in a vicious circle, to say nothing of the tendency to loss of coal in mining through incomplete recovery. Some of the causes are listed, such as the immense areas of coal lands available at nominal expense, the low cost of opening mines especially in the lignite field, strikes, the unregulated, highly seasonal demand, etc.

The remedies that have been suggested are examined and are found to present three stages of State control; first, to prevent new openings and let the situation work itself out; secondly, not only this but to close down some of the present mines; and thirdly, to nationalize the industry. For reasons that are given at length, none of these schemes seems to be feasible nor could the Commission devise any modifications of them that it was willing to put forward at this time. On the other hand, those who advocate a complete *laissez faire* policy are reminded that there are plenty of precedents for public policy overriding the uncontrolled exercise of private rights. After many attempts to find a more rapid solution, the Commission has had to content itself, for the present, with the slower, but no doubt sounder, method of endeavoring to remove the causes of over-development. The recommendations with this end in view are given at some length, even in the summary below; but, as in other matters, the full text of the Report should be read.

The over-development in numbers, as distinguished from aggregate capacity, is examined in a separate section on Small Mines. Statistics are repeated from Chapter III to show the prevalence of such mines. Well over half the mines in the province produce on the average much less per mine than the annual output of one average contract miner in an ordinary pit. Their combined output, therefore, is not much of a factor in the industry; but, in certain markets, their competition is troublesome out of all proportion to their tonnage. On the other hand, they have served a purpose in outlying districts. One of the charges against them is that of spoiling the best points of access by improper mining methods. The recommendations respecting them are not based on mere size but are directed towards remedying what is wrong in the conduct of such mines. Amalgamations of mines are discussed briefly and some form of control over new openings seems to be a condition precedent to their success. Here again, much time was spent in trying to formulate some definite plan

for immediate action but without finding anything which the Commission could put forward as feasible in the circumstances. As the steps for controlling over-development take effect and the industry becomes more stabilized, a number of amalgamations in the province should prove possible and would be highly desirable.

As to the nationalization of the mines, the latest schemes are presented with a brief statement of the arguments for and against. None of the advocates of nationalization regarded it as feasible, if carried out only as a provincial undertaking. This being so, and the Commission agrees that it is, no attempt has been made to pass on the larger scheme, which hardly comes within this Commission's purview. In any case, it concludes that the Government should first exercise the powers of control which it at present possesses, with the modification of those powers and the stricter enforcement of them suggested in this Report, before contemplating any fundamental change in the whole system.

2. SUMMARY OF THE RECOMMENDATIONS

For this summary the recommendations which occur throughout the body of the Report have been assembled somewhat in the order of their importance and by subjects. No attempt is made to repeat the argument. For this and for the fuller statement of the recommendations themselves reference should be made in each case to the pages of the Report indicated.

The Commission recommends:

(1) A Mines Department of the Province of Alberta (p. 322); the Deputy Minister to be a thoroughly competent and experienced Mining Engineer of high standing (p. 324); the Mines Department to exercise all the executive functions of the Government in connection with the coal industry and to co-ordinate and control all its activities relating thereto such as the Mines Branch (p. 323); all work on coal of the Research Council (p. 316); of the Trade Commissioner (p. 316); and of the Labor Commissioner; as well as administering the coal resources and controlling the mining development if and when these come into the possession of the province.

(2) A Coal Industry Advisory Council composed of the Deputy Minister of Mines as Chairman, two operators, two mine workmen, a coal dealer and one other representing the general public, to advise the Government on all matters concerning the industry (p. 324).

(3) As gradual remedies for over-development; enforcing the terms of present leases and withholding new leases until warranted; this policy should be worked out in conjunction with other owners of mineral rights; seeking new markets and improving the present marketing methods; and strict enforcement of all the powers for regulating the opening and running of mines whether those powers be contained in the terms of leases or arise from considerations of the safety, health and comfort of the mine workers (p. 329).

(4) To avoid further complications; the immediate suspension of all general coal mining regulations of the Dominion Government pending the final decision as to the transfer of coal mining rights to the province and thereafter pending the determination by the province of its policy; meantime each application for a lease to be dealt with by the Government on its merits (p. 319); new leases to run for a term or be open for revision at a time that will conform with the expiry of existing leases so as to permit of amendment throughout (p. 320); the present right of unconditional reinstatement of a defaulting lease holder to be amended to make the renewal lease subject to changes in regulations (p. 320).

(5) As to seasonal unemployment; co-operation by dealers and consumers to spread demands more evenly throughout the year (p. 183); summer storage by dealers and consumers (pp. 148 and 159); regulation by consultation between the parties, if necessary under Government auspices, of the programme of deliveries of coal for railway use (pp. 126 and 128); organization through the Labor Department of the Government of a seasonal migration of the surplus working force between the bituminous and lignite mines and vice versa and between the bituminous mines and the harvest fields (pp. 241 and 128).

(6) As to labor relations within the industry; clearness of expression in agreements (pp. 218, 226, etc.); simplification of wage scales and the making of rates commensurate with the skill and experience as well as the energy required (p. 216); an earnest determination on both sides to use existing machinery for adjusting minor disputes, such disputes to be disposed of promptly instead of being allowed to accumulate to add bitterness to the main struggle over the renewal of wage agreements; in general the utmost simplification of the decision to be made at the time of negotiating the new agreements (pp. 224, 229, 270 and 271); the fullest possible publicity of the facts during the discussion of agreements (p. 272); notice of any change desired by either party in existing agreements to be given at least sixty days prior to their termination (p. 272); if a new agreement has not been made thirty days before the termination of the old agreement the appointment of a Conciliation Board under the Industrial Disputes Investigation Act of Canada (or a provincial substitute for that Act) to be compulsory; a compulsory ballot by the rank and file of the mine workmen's unions on the findings of any such Conciliation Board; if the foregoing fail to obviate serious labor disturbances the appointment of an independent Commission continuously investigating and publishing the facts which affect the labor relations of the industry (p. 273).

(7) As to the operation of mines; enforcement on all mines irrespective of size of proper methods of mining (p. 332); more thorough inspection of mines and more rigid enforcement of the Mines Act and regulations disregarding for the future the plea of pioneering conditions (p. 286); provision for compulsory inspection of mines by committees of the men (p. 279); the phrase "Not Mining Engineers" to be deleted from the section referring to the composition of workmen's inspection committees (p. 278); improvements in standards of mining practice and increased use of labor saving devices such as mechanical loaders (pp. 67 & 88); a study of the supply of mine timber (p. 75); increased recognition of the importance of good service to the men at the face in the way of supply of mine cars, timber, ventilation, etc. (p. 235); certificates of competency for certain classes of mine workmen (pp. 232 and 282); the removal of any legislative and other impediments that may stand in the way of properly conducted amalgamations of mining interests (p. 333).

(8) As to marketing in general; co-operative methods or "pools" (p. 169) in the first instance for the Manitoba market

(p. 148) and the Ontario market (p. 155); incidentally restricting the number of dealers and eliminating dealers' difficulties (pp. 163 and 164); recognition by operators and workmen of the supreme importance of regularity of supply for the railway market (p. 124), for the Manitoba market (p. 146) and generally; legal sizes for coal for the domestic trade (p. 160); accurate information regarding coals as prepared for market and as they reach the consumer (p. 30); expert samplers and proper sampling equipment for this purpose (p. 29); reductions in freight rates (pp. 140, 157, etc.); provision of bunkering facilities at Prince Rupert as soon as sufficient shipping is established at that port and a case made out for Alberta coal being able to compete successfully (p. 135); preparation of a comprehensive scheme for power stations at coal mines well in advance of the need arising as it may in the not distant future (p. 174); but as to low temperature carbonization to leave it to others to prove the commercial feasibility of this process (p. 176).

(9) As to the Ontario market; large scale summer shipments of coal at special mine prices and special freight rates to induce off season purchases thereby balancing up mine and railway operation, the future development in this market to be kept similarly balanced by the same methods (p. 154); a Dominion Government subsidy carrying with it the right to supervision by the Federal Government (p. 155).

(10) As to the market in Manitoba and Saskatchewan; the securing of accurate figures of the annual consumption of coal in each of these provinces (p. 119). To the end that the coals of Saskatchewan and Alberta may capture the entire prairie market, campaigns by Governments, Boards of Trade and other public bodies as well as by the coal industry (p. 148); increased duties on coal (p. 321); more effective anti-dumping provisions (pp. 147 and 322); reductions in freight rates (pp. 142 and 148); and special summer freight rates (p. 157).

(11) As to non-payment of wages; provisions for ascertaining the situation more promptly and to hold the mine as well as the operator responsible with precautions against recurrences by requiring guarantee deposits (p. 281).

(12) As to the comfort and health of mine workmen; abandonment of the plea of pioneering; the improvement in living conditions cannot be postponed until the industry becomes more stable but on the contrary will help to make it so (p. 260); better standards for housing accommodation, water supply and sanitation in mining camps (pp. 261 to 263); much higher standards set and enforced in health matters generally (p. 313); same standards to be enforced on older mining communities under the procedure of the Town Planning Act with any necessary amendments (p. 263); special study by experts to work out all the details of these living and housing standards (p. 264); provision in closed camps in addition to the Company-owned houses of building lots available to the workmen under certain building restrictions (p. 262); opportunity for full investigation by committees of the workmen in cases of complaint regarding the cost

of living in closed camps (p. 259); improvement in the wash-house accommodation provided and in the care of wash-houses (p. 234); man trips where possible (p. 231).

(13) As to miscellaneous operating conditions; acceptance by mine workmen of semi-monthly instead of fortnightly pay or in the alternative Government returns to be based on thirteen reporting periods in each year, each period consisting of two fortnightly pay periods (p. 223); right of workmen's representatives to examine books recording the times of raising and lowering of men (p. 275); notices of the time and place of holding coroners' inquests (p. 278); Government inspection of mine scales every three months and in the presence of representatives of the workmen (pp. 234 and 277); use of electric headlights where safety lamps are required (p. 278); blanket rates to be replaced by separate rates for mining and for the various kinds of deadwork (p. 239); special permits for old workmen in connection with minimum wage clauses (p. 226).

(14) As to the Workmen's Compensation Act (Accident Fund) and the Workmen's Compensation Board; repeal of the power to make safety regulations for mines, substituting therefor the right to make recommendations for such regulations to be imposed by Order in Council as under the Mines Act (p. 287); flat rate basis of compensation instead of the present percentages of earnings (pp. 293 and 305); trial of the plan of having the Workmen's Compensation Board appoint its own salaried accident doctors (p. 309); abolition of demerit ratings at least on the present basis (p. 296); reports of accidents to be made only to the Compensation Board and by it made available to the Mines Branch (p. 308).

(15) As to official publications and reports; modification of the claim for the percentage of the world's resources of coal situated in Alberta so as to correspond with later knowledge making that percentage at most three per cent. and not fourteen per cent. as formerly (p. 32); discontinuance of the descriptive term "domestic coal" as a substitute for lignite coal (p. 27); compilation and publication of non-union rates for certain standard classes of workmen as well as the union rates that have been published heretofore (p. 220).

Alberta Coal Commission

B—THE REPORT

CHAPTER I

INTRODUCTORY

The Commission by which this enquiry was instituted is given as Appendix I to this report. A perusal of it will show that the terms of reference are all embracing. It is hard to conceive of anything pertaining to the coal industry of the Province of Alberta that is not included in them. Reversing the usual order, the general expressions might have been used to limit the subjects listed for specific inquiry; because the object indicated is to bring out the facts, circumstances or conditions which would be deemed helpful in determining and establishing a wise and efficient policy by the Government. But it was impossible to say in advance what features would prove to be important in this regard. Legislative or departmental action should be based on the broadest possible knowledge of the industry and not merely on those parts of it to which such action is immediately directed. Therefore it became the duty of the Commission, as far as lay in its power, to cover the whole industry in its inquiry and to endeavor to bring out all the main facts.

The task thus set has not been fully achieved. The Commission makes no claim to having ascertained all the main facts of the coal industry of Alberta. Every avenue of inquiry that has been pursued showed by-paths of possible exploration which the Commission was precluded from following owing to obvious limitations of time and expense. Reference may be made here to the work of the United States Coal Commission. Granting the disparity in the magnitude of the operations involved, the complexity of the problems is not unlike. That Commission quotes an estimate that the data it ordered from the operators in the industry cost them more than ten million dollars to prepare. The investigation made by that Commission into the one subject of labor relations was based on the work of fourteen trained observers who spent three months in the field. The Commission's own corps of engineers was employed for seven months on outside work and an equal period in the office. For its inquiry into the financial operations of the Companies, the data obtained through statements filed by the Companies and from Government returns

was supplemented by its own corps of accountants, who spent weeks in a single office. To have applied similar methods to the problem in Alberta, which duplicates nearly all the features of the United States problem, although on a comparatively diminutive scale, would have involved too great an expense.

The work of this Commission has been increased by the necessity for establishing many of the fundamental facts of the industry. To illustrate what is meant by this, it would appear even from the brief accounts given in the daily press that the new British Commission in its very first session was able to call on witnesses who presented information on many matters the counterpart of which has been arrived at here only after months of investigation. This is only another way of calling attention to the comparative youth of the industry in Alberta and is not meant as a reflection on the work of those who have been charged with recording its progress. For the same cause circumstances here change with great rapidity. As one well-informed witness remarked: "I tell you that today; I might tell you something else tomorrow."

The Commission, therefore, is very far from wishing to claim either completeness or finality for its presentation of the facts. This general explanation will obviate the necessity for repeating the qualification throughout the report. It must be understood, then, that the account here given is subject in the first instance to the personal equation of the Commissioners and, moreover, is such an account as they have been able to present with the time and means at their disposal.

At the outset of the inquiry, it was thought wise to set up Divisions of the province in order to simplify the study of the problems. Beyond the fact that both form part of the coal industry of Alberta, there is not much in common between a mine in the Crowsnest Pass working a pitching seam of bituminous coal and selling the bulk of its product for use on a transcontinental railway and a mine of lignite coal on the prairies with largely a local, domestic market. It is certainly better to study them separately. As in most other attempts at a geographical separation, however, the distinctions fade out at the boundaries. No higher validity is claimed for the scheme here suggested than that it has assisted in segregating the problems for the purposes of this investigation. The division has been made with some regard to character of coal, mining conditions, transportation facilities and markets. No one of these elements can be pressed too far. Many of the divisions will be found to contain several grades of coal and more than one outlet to market. But on the whole the operations within any division have sufficient points of similarity among themselves and sufficient points of difference from those of any other division.

It was desirable that these divisions should be constituted by grouping any pre-existing units rather than to cut across the boundaries of such. The chief reason for this was to have immediately available all records and statistics of such units. A change, however, has just been made in the units for recording and re-

porting purposes. The "Districts" in use for a number of years gave place as at the first of January, 1925, to more scientifically determined "Coal Areas." The Divisions have, therefore, been made by a grouping of these Coal Areas. Unfortunately, this means a loss of precise continuity with the statistics of the past but, as will be explained in the proper place, the effect is not serious. The names here used for the divisions are those commonly employed in referring to the mining operations in that part of the province. The map (Plate I—not printed) appended to this report shows the coal areas grouped into thirteen Divisions as follows:

TABLE 1.—*Coal Mining Divisions of the Province of Alberta*:

Divisions		Coal Areas	
No.	Name	No.	Name
1.	Crowsnest	K. 9	Old Man
		K. 10	Crowsnest
		B. 7	Pincher
2.	Canmore	K. 7	Cascade
		K. 8	Highwood
		B. 5	Morley
		B. 6	Pekisko
3.	Brazeau	K. 4	Nordegg
		K. 5	Clearwater
		K. 6	Panther
		B. 4	Saunders
4.	Mountain Park	K. 1	Smoky River
		K. 2	Brule
		K. 3	Mountain Park
		B. 2	Prairie Creek
		B. 3	Coalspur
5.	Lethbridge	B. 8	Magrath
		B. 9	Lethbridge
		B. 12	Taber
		B. 10	Milk River
6.	Medicine Hat	B. 16	Empress
		B. 13	Redcliff
		B. 11	Pakowki
7.	Brooks	B. 15	Steveville
		B. 14	Brooks
		E. 11	Gleichen
		E. 12	Champion
8.	Drumheller	E. 7	Big Valley
		E. 8	Carbon
		E. 10	Drumheller
		E. 9	Sheerness
9.	Ardley	E. 6	Ardley
		E. 5	Castor
10.	Pembina	E. 14	Whitecourt
		E. 1	Pembina
11.	Edmonton	B. 19	Rochester
		E. 2	Edmonton

Divisions		Coal Areas	
No.	Name	No.	Name
12.	Tofield	B. 18	Pakan
		E. 3	Tofield
		E. 4	Camrose
		E. 13	Wetaskiwin
		B. 17	Wainwright
13.	Peace River	B. 20	Sexsmith
		B. 1	Halcourt

Appendix No. II gives for each Division and each Coal Area the mines by number and name of Company and the output of each mine for the years 1923 and 1924, all as supplied to the Commission by the Mines Branch of the Province.

The first work of the Commission was to prepare a series of questionnaires, the blank forms of which are given as Appendix No. III (not printed). These were:

1. A general questionnaire to mine operators.
2. A chairman's questionnaire to mine operators.
3. A questionnaire to secretary-treasurers of local unions of mine workers.

The operators' questionnaires were sent to all the mines which for the year 1923 had produced 2,000 tons or more. The union questionnaires were sent to all miners' organizations of record in the province.

For the most part, all concerned have responded splendidly in sending in full and painstaking replies. The exact extent to which this is true will appear under the various headings, where the percentage of reporting mines will be indicated. The compilation of these answers has furnished the largest single source of the information embodied in this report. Abstracts of the replies to the general questionnaire to operators and to the union questionnaire, grouped under related questions, were prepared in loose-leaf form for each Commissioner and a set of these is submitted herewith as Appendix No. IV (not printed). The general object of the chairman's questionnaire and the replies thereto are fully discussed in Chapter V on Capitalization and Profits and Losses.

Public sessions of the Commission were held as follows:

May 5 to 7, 1925—Court House, Edmonton.
May 11 to 13, 1925—Court House, Calgary.
May 14 and 15, 1925—Court House, Drumheller.
May 18 and 19, 1925—Court House, Lethbridge.
May 21 and 22, 1925—Court House, Blairmore.

Full notice of these sessions was given through the daily press, by notices to all mine operators and organizations of mine workmen and by special invitation to a number of individuals. At every session, anyone present was urged to come forward with information or suggestions. The evidence taken at these sessions has been extended and with the accompanying exhibits put in by various witnesses is attached hereto as Appendix No. V (not

printed). It should be remarked that this evidence, together with the exhibits, forms the basis, at a rough estimate, for not more than one-third of the ensuing report. This will explain the inclusion of facts which were not brought out at the public hearings or which may seem at variance with the weight of the evidence there given. During the itinerary of the province for the purpose of holding these sessions, the Commissioners visited mines in each locality, with side trips to mines in other localities, and inspected in a general way the living and housing conditions. A special trip for similar purposes was made to the mines on the Alberta Coal Branch. Numerous witnesses have appeared before the Commission at informal sessions and many others have given much assistance by correspondence. A careful study has been made of current publications and of the reports of other Commissions both here and elsewhere. A considerable library has been assembled, a catalogue of which is attached as Appendix No. XIII.

No attempt has been made to quote the specific authority for most of the findings here given. To do so would unnecessarily enlarge the report and present difficulties in justly ascribing to the proper person a statement which perhaps in slightly different form has been made by many. Neither is it possible to set out in detail all of those to whom the Commission is indebted for valuable assistance in its work. The various officials of the Government, the professors at the University, the members of the Scientific and Industrial Research Council of Alberta, the coal operators of the province and their staffs, the mine workmen and their officers, those engaged in various branches of the coal trade, the officials of the two great railways, representatives of the consuming public and many other public and private citizens—all these have shown the utmost willingness to co-operate and to contribute their information and ideas in an attempt to present an account of an industry which all realize has great present and potential importance.

CHAPTER II

COAL RESOURCES AND OWNERSHIP

The following account of the general geology of the province in its relation to the Coal Reserves is based on the evidence of Dr. John A. Allan, Professor of Geology at the University of Alberta, and his paper *Geology of Alberta Coal* read at the annual meeting of the Canadian Institute of Mining and Metallurgy, March, 1925. This paper as originally printed contained typographical errors in the figures, which Dr. Allan has since corrected.

General Geology

In Carboniferous times marine conditions existed through the central part of North America from the Gulf of Mexico to the Arctic Ocean, extending right through to the Pacific Ocean on the west. The eastern boundary is not yet determined but was somewhere between the eastern side of Alberta and Hudson Bay. This was before the Rockies were formed and there are no Carboniferous coals in Alberta or Western Canada. At the close of the Carboniferous the Rockies were thrust up by pressure from the west and the sea became shallower and narrower with broad swamps and marshes along the shores. It was along these shore lines, around inland bodies of water and in the lowlands that vegetation flourished and ultimately gave rise to the coals. The Alberta coals are Cretaceous in age and as compared with Carboniferous coals are much less regular, being composed of a different kind of plant material. Many Carboniferous coals are made up of large trees but the Cretaceous coals originated from smaller types of vegetation which grew along the shore lines where conditions were changing very rapidly. Therefore coal seams in Alberta vary from place to place and in the distance of a few miles in a certain direction a workable seam may change into an area where there is no coal at all. Dr. Allan gave a very interesting account of the origin of the different grades of coal. The vegetable material varies in composition, being plant spores, leaves, branches, bark, etc., and the percentage of carbon differs in the different parts of the tree. The vegetable substances are not all at the same stage of maturity and the foreign material that is associated with the plants varies also. There are three distinct coal horizons in Alberta, all of the Cretaceous age. The lowest is the Kootenay, next the Belly River or Saunders and at the top the Edmonton. The general geological structure of Alberta east of the mountains is a trough or depression extending in a north and south direction through Central Alberta. The youngest rocks are found within the trough and the older rocks appear at the surface in the foothills in a most complicated series of folds and on the east in almost flat-lying strata with local

folds and deflections. The coal bearing rocks are of fresh water or brackish water origin and have the irregular distribution of material characteristic of such shore deposits. A series of beds may contain coal in one locality and yet sometimes within a mile or a few miles may not contain any workable seams of coal or may even be void of coal beds altogether.

The Commission considers it highly important to recognize the geological facts with reference to the origin of coal in Alberta and in particular the liability to irregularity in occurrence as contrasted, for example, with coals of Carboniferous age in other coal fields. The full significance of this will appear from the discussion of estimated coal resources. During the course of Dr. Allan's evidence he stated that from fifteen to twenty per cent only of the Province of Alberta could yet be said to have been examined geologically. This feature must be borne in mind in connection with all estimates for discussion in this report and elsewhere.

Classification of Coal

The coals of Alberta are classified in descending order as:

Semi-Anthracite,
Bituminous,
Sub-Bituminous,
Lignite.

About the year 1919 a change was made in the returns and reports of the Mines Branch of the province and since that time the lignite coal has been called "domestic." The change was made at a time when Alberta lignite was finding new markets and was probably in danger of being confused with the inferior lignites occurring elsewhere. At present, however, it appears to the Commission that the regulations which will be referred to later, whereby coal from each field in Alberta preserves its identity and becomes known in the market by its registered trade name, has largely removed the reason for the use of this special word. To call the Alberta lignite coal "domestic" is open to the objection that the sub-bituminous coals of the province are also an excellent domestic fuel. The neighboring States of the Union use the term "domestic sub-bituminous" and even "domestic bituminous." Altogether, then, the Commission considers that the use of this term, which is not recognized in the nomenclature of coals as commonly applied, tends to create some confusion without sufficient compensating advantage. Throughout this report the various coals will be designated by the terms stated at the beginning of this paragraph.

As to the precise definition of the various classes of coal, Mr. Edgar Stansfield, the Secretary and Chemical Engineer of the Scientific Industrial and Research Council of the Province of Alberta, in his paper *A Chemical Survey of Alberta Coals*, after examining other classifications which he rejects for one reason or another, suggests the following classification. This classification is for coals below the anthracite or as they are commonly called the semi-anthracite coals.

TABLE 2.—*Suggested classification for Alberta coals (other than Anthracite coals) based on calorific value and volatile matter of moist coal as mined (with adjusted ash).*

TITLE OF CLASS	SHORT FLAME BITUMINOUS	LONG FLAME BITUMINOUS	SUB-BITUMINOUS	BLACK LIGNITE	BROWN LIGNITE
Definition of Class—					
Calorific value	Above 12,700	Above 12,700	10,700 to 12,700	8,200 to 10,700	Below 8,200
Volatile matter	Below 20%	Above 20%			
Areas by Classes—					
Kootenay horizon	Brule Mountain Pk. (1) Nordegg Cascade	Mountain Pk. (1) Crowsnest			
Belly River horizon			Halcourt Coalspur Saunders Pekisko Pincher (1½) Magrath Lethbridge	Milk R. Pakowki (2) Taber Redcliff Brooks	Pakowki (4) Sexsmith
		Pincher (½)			
Edmonton horizon				Pembina Edmonton Camrose (2) Castor (5) Ardley Big Valley Carbon Drumheller Gleichen Champion	Tofield Camrose (2) Castor (3) Sheerness
Observed Range of Analysis—					
Moisture, per cent	1.5 to 3.4	1.6 to 4.5	6.9 to 14.2	12.1 to 26.4	26.6 to 37.5
Volatile matter, per cent	14.1 to 19.6	23.5 to 30.0	30.4 to 35.9	26.9 to 34.1	26.8 to 29.4
Cal. Val. B.T.U., per lb.	13,900 to 13,540	13,590 to 12,980	12,440 to 10,740	10,650 to 8,290	8,150 to 6,460
Moisture in air-dried coal, per cent.	0.7 to 1.0	0.7 to 1.3	2.5 to 8.3	10.5 to 19.0	13.4 to 21.7

The numbers in brackets are the number of townships in the respective coal areas having each class of coal.

It will be noted that some, but not all, of the coal areas are shown in the foregoing table, divided according to the suggested classification of coals. Where certain areas contain coal of more than one quality such areas appear in both columns with a number in a bracket indicating the number of townships in that area having each class of coal. The first column of the table gives the geological horizon as Kootenay, Belly River or Edmonton. As will be seen this classification is based on the calorific value and volatile matter of the various coals in the moist state as mined but with adjusted ash. Since the percentage of ash in any particular coal varies even in the same seam it is necessary for the purpose of classification to adjust to some uniform standard of ash. The standard adopted by Mr. Stansfield for the above classification is taken as eleven per cent of mineral matter (taken as equivalent to ten per cent of ash). The full discussion of this classification along with an examination of other classifications will be found in the paper above referred to, *A Chemical Survey of Alberta Coals*, which is attached to the evidence taken by the Commission as Exhibit No. 11 (not printed). So far as the Commission feels itself competent to judge of such matters the classification suggested by Mr. Stansfield seems adequate and satisfactory. The Commission suggests that some such classification based on scientific data be adopted and used throughout.

The occurrence of coals of different classes in the same geological horizon was explained by Dr. Allan and Mr. Stansfield in their evidence as due to the fact that the maturing of the coal has been brought about not so much by mere lapse of time as by the pressure of the upthrust of the Rocky Mountains. For example in the Carbon and Drumheller coal areas there is a distinct drop in grade from the older seam to the younger seam but the youngest seam at the most westerly point is very distinctly superior to the oldest seam at the most easterly point, although the actual distance separating them is only thirty miles. This very important fact must always be borne in mind in any consideration of Alberta coal deposits, Belly River coals in the foothills are of a very different grade from Belly River coals exposed in Eastern Alberta.

Sampling and Chemical Analysis

A most important step in any examination of coal deposits by chemical analysis or otherwise is the taking of a sample. Obviously, unless the sample be correctly taken to represent the coal seam as a whole or a part of the seam or the average of the coal as shipped or whatever it is supposed to represent, all subsequent work done on that sample can only give a misleading result. Experience, conscientiousness and a proper equipment are necessary for the taking of a sample. The Commission approves the suggestion made to it by several witnesses that the best method of securing uniformity would be to have one qualified sampler with full equipment moving about from place to place throughout the shipping points of Alberta and the consuming centres in the Western Provinces taking samples from the coal

in the seams, from the coal as shipped and from the coal as it reaches the consumer. There are many problems connected with the industry that require some such care in sampling to furnish accurate information for their solution. The Commission is informed that negotiations have been carried on between the Research Council of Alberta and the Department of Mines at Ottawa with a view to co-operating on some such system of sampling, the analyses to be undertaken by the Research Council at the University of Alberta. In the Commission's opinion if analyses are made and the results published the question of proper sampling is all important.

The last report of the Research Council, Report No. 14—Analyses of Alberta Coal, has just been published. This report contains a map showing the coal areas. An interesting feature of it is a series of outline maps of the province on which are plotted like contour lines the occurrences of coal grouped under the following characteristics:

Moisture as Mined: The lines joining coals having the same percentage of moisture when mined run closely parallel with the mountains and show in order from west to east, 2%, 4%, 8%, etc., by 2% intervals up to the maximum.

Calorific Value of Moist Coal as Mined (Adjusted Ash):

This chart shows the British thermal units in the coals above described and the lines joining equal values, while showing more irregularities than the preceding chart, also run roughly parallel with the mountains and give, in descending order from west to east, from 13,900 B.T.U.'s down to 6,500 B.T.U.'s. In *A Chemical Survey of Alberta Coals* above referred to a similar chart was given based on the calorific value of the dry coal in B.T.U.'s, and the lines of equal value once more run roughly parallel with the mountains, showing from west to east values from 14,000 B.T.U.'s down to 10,300 B.T.U.'s.

The report gives full notes on the taking of samples and the methods of making the analyses and then proceeds to tabulate the results divided into the coal areas. For each coal area there is a map on which is shown the location of the sample. Maximum, minimum and typical analyses are given with the calorific value corresponding to each as well as various other characteristics of the coal. No doubt this report will require revision from time to time as further analyses are made.

The Commission would point out the necessity, which is also recognized by those engaged in this work, of providing similar accurate information as to the various coals in their commercial state. It is conceded that samples from the mine are apt to differ from the coal as actually shipped. There are many questions remaining to be answered as to what happens to the coal between the time of shipment and the time of consumption in the market. It gains weight from certain causes and loses weight from others. What interests the consumer is the analysis of the coal and its heating value at the moment of combustion. Even specimen analyses of the various coals at point of combustion give useful information to the operator. It would not, however, be fair to

publish these unless care were taken to see that they represented a fair average of the shipments from that particular mine. The large consumers of coal like the railways make such analyses regularly and advise the mine every day or every week how their product is running. Some of the coal pools in the United States have very thorough sampling and reporting arrangements to keep their members up to standard. The Commission agrees with the project of the Research Council to extend this work of sampling and analysis to cover the coal as it moves in commerce, taking care to see, as mentioned above, that any analyses published are truly representative of the average output of the particular mine in question.

Estimated Coal Resources

In 1913, on the occasion of the meeting at Ottawa of the Twelfth International Geological Congress, *The Coal Resources of the World* was published, giving all that was then known as to the coal reserves. The occurrences of coal were considered in two groups:

Group 1—including seams of 1 foot and over to a depth of 4,000 feet.

Group 2—including seams of 2 feet and over at depths between 4,000 and 6,000 feet.

An elaborate classification of coals was added but for present purposes it will be sufficient to say that:

Class A equals our anthracite coal.

Class B and C together equal our bituminous.

Class D equals our sub-bituminous and lignite coals.

The grand totals given by this publication may be grouped as follows:

TABLE 3—*Estimates from "Coal Resources of the World," published in* 1913. (*See text for reductions to be made in Alberta estimates*).

	Millions of Tons
United States	3,838,657
Canada	1,234,269
China	995,587
Germany	423,356
Russia, Europe and Asia	233,985
Great Britain	189,533
Australia	165,572
Other European Countries	111,195
India	79,001
South Africa	56,849
South America and Miscellaneous	38,430
Other Asiatic Countries	31,119
The World	7,397,553

The place that Alberta was accorded in this compilation in comparison with Canada and the world will appear from the following:

TABLE 4.—*Estimates from "Coal Resources of the World"* (1913). (*See text for reductions to be made in Alberta estimates*).

	In Millions of Tons				
	Alberta*	Canada	World	Alberta Percentage of Canada	Alberta Percentage of World
Anthracite coal .	768	2,158	496,846	35.59%	.15%
Bituminous coal .	198,092	283,661	3,902,944	69.83%	5.07%
Sub-bituminous and lignite coal	876,179	948,450	2,997,763	92.38%	29.23%
Total all coals.	1,075,039	1,234,269	7,397,553	87.10%	14.53%

*These are the figures given in the summary. The figures in the special report on Alberta differ slightly.

The above estimates include both "actual" and "probable" reserves, only about one third of Alberta's quota occurring in the former category. The estimate for Alberta proceeds from the assumption that there are, in all, 81,878 square miles underlain by coal. Practically the whole of Alberta's estimate comes in Group 1, *i.e.*, seams of 1 foot and over to a depth of 4,000 feet. As stated the above represents the best informed opinion in the year 1913. Since that time much work has been done on the geology of coal in Alberta. Attention has been called to the marked irregularity of the coal seams as revealed by further study which corresponds with the commonly accepted fact that Cretaceous coals such as ours show that peculiarity.

In evidence before the Commission, Dr. Allan gave an area of 12,000 miles as the total on which they were now inclined to think coal existed; although, as will be seen, his actual estimate prepared for the Commission deals with only about one fifth of even this restricted territory. Since the bulk of the world's coal in the estimates quoted occurs in the United States and Europe, where conditions are better known, and moreover consists of the more uniformly occurring Carboniferous coals, it is hardly possible to expect a similar shrinkage of all the estimates. This Commission, therefore, believes that even on the definition of seams of one foot and over to a depth of 4,000 feet the present state of knowledge demands a reduction of the Alberta estimates, both as to area and quantity, to at most one fifth of the 1913 calculations. Even allowing something for similar reductions elsewhere, it will more nearly represent the latest information to say that Alberta probably has 3% and not 14% of the world's coal resources. Certainly there appears to be no warrant for continuing to make the statement that Alberta has one-seventh of the known coal deposits. Even so the reserve is enormous and is not a limiting factor in the industry.

While it may serve for purposes of comparison even this reduced estimate is far too great from a practical point of view.

On the basis of present requirements and mining practice, projecting the present rate of expansion for a hundred years into the future, a one-foot seam of coal three or four thousand feet below Alberta's surface can hardly be of value to anyone. Many will think the Commission has gone too far in fixing on coal seams two feet and over in thickness known to occur within one thousand feet of the surface. This, however, is the definition used in this report for Alberta Coal Reserves and it is on this basis that Dr. Allan, Professor of Geology at the University of Alberta, has made his estimate given below. This has involved much work on Dr. Allan's part and very special appreciation is due him for it.

As noted below the Smoky River area where coal is known to exist in large quantities is omitted because of lack of accurate knowledge and because it is, at present, not provided with transportation facilities. Similarly Clearwater, Panther and Prairie Creek Areas have been omitted. Dr. Allan's estimate is based on seams that may be taken to be proved by exposure, mining operations or drilling. The area covered is 2,488 square miles (as against his 12,000 square miles of probable coal and as against 81,878 square miles in *Coal Resources of the World.*)

TABLE 5.—*Coal reserves on certain known areas in Alberta estimated for the Commission by Dr. Allan on the basis described above being coal in seams two feet or over in thickness and within* 1,000 *feet of the surface. Note omission of any estimate for Clearwater, Panther, Smoky River and Prairie Creek coal areas.*

Division and Coal Area No.	Name	Area Sq. Miles	Tons of 2,000 Lbs.	Total of Division Tons of 2,000 Lbs.
I. Bituminous Coal—				
1.	CROWSNEST—			
K. 9	Oldman	72	2,488,320,000	
K. 10	Crowsnest	216	6,220,800,000	8,709,120,000
2.	CANMORE—			
K. 7	Cascade	144	6,451,200,000	
K. 8	Highwood	108	8,294,400,000	14,745,600,000
3.	BRAZEAU—			
K. 4	Nordegg	36	1,119,744,000	
K. 5	Clearwater			
K. 6	Panther			1,119,744,000
4.	MOUNTAIN PARK—			
K. 1	Smoky River			
K. 2	Brule	36	1,866,240,000	
K. 3	Mountain Park	108	4,976,640,000	6,842,880,000
	Total bituminous	720	31,417,344,000	31,417,344,000
II. Sub-Bituminous Coal—				
1.	CROWSNEST—			
B. 7	Pincher	36	313,344,000	313,344,000
2.	CANMORE—			
B. 5	Morley	108	1,468,800,000	
B. 6	Pekisko	108	2,176,000,000	3,644,800,000
3.	BRAZEAU—			
B. 4	Saunders	72	1,566,720,000	1,566,720,000

Division and Coal Area No.	Name	Area Sq. Miles	Tons of 2,000 Lbs.	Total of Division Tons of 2,000 Lbs.
II. Sub-Bituminous Coal—*Continued*				
4.	MOUNTAIN PARK—			
B. 2	Prairie Creek.....			
B. 3	Coalspur	144	6,092,800,000	6,092,800,000
5.	LETHBRIDGE—			
B. 9	Lethbridge	216	1,175,040,000	
B. 8	Magrath	72	626,688,000	1,801,728,000
13.	PEACE RIVER—			
B. 1	Halcourt	72	1,175,040,000	1,175,040,000
	Total sub-bituminous....	828	14,594,432,000	14,594,432,000
III. Lignite Coal—				
5.	LETHBRIDGE—			
B. 12	Taber	114	614,400,000	
B. 10	Milk River	112	1,024,000,000	1,638,400,000
6.	MEDICINE HAT—			
B. 16	Empress	1	5,120,000	
B. 13	Redcliff	1	6,144,000	
B. 11	Pakowki	41	419,840,000	431,104,000
7.	BROOKS—			
E. 11	Gleichen	4	61,440,000	
E. 12	Champion	10	153,600,000	
B. 15	Steveville	3	15,360,000	
B. 14	Brooks	36	184,320,000	414,720,000
8.	DRUMHELLER—			
E. 7	Big Valley	7	215,040,000	
E. 8	Carbon	33	709,632,000	
E. 10	Drumheller	288	3,072,000,000	
E. 9	Sheerness	17	261,120,000	4,257,792,000
9.	ARDLEY—			
E. 6	Ardley	15	537,600,000	
E. 5	Castor	33	460,800,000	998,400,000
10.	PEMBINA—			
E. 14	Whitecourt	2	30,720,000	
E. 1	Pembina	72	1,843,200,000	1,873,920,000
11.	EDMONTON—			
B. 19	Rochester	1	5,120,000	
E. 2	Edmonton	115	1,382,400,000	1,387,520,000
12.	TOFIELD—			
B. 18	Pakan	2	16,384,000	
E. 3	Tofield	20	307,200,000	
E. 4	Camrose	7	107,520,000	
E. 13	Wetaskiwin	2	30,720,000	
B. 17	Wainwright	2	16,384,000	478,208,000
13.	PEACE RIVER—			
B. 20	Sexsmith	2	20,480,000	20,480,000
	Total lignite.....	940	11,500,544,000	11,500,544,000
	Total all coals.....	2.488	57,512,320,000	57,512,320,000

For each coal area, the above estimate is based on a certain number of seams of a certain aggregate thickness, according to the facts ascertained or the best surmise that can be made from the known facts. The area in square miles is, for the most part,

the total of certain townships that are presumed to be underlain by coal. Owing to the elements of uncertainty involved in these basal factors of the particular townships or, in some cases, sections and the aggregate thickness of the coal seams fulfilling the conditions mentioned, these particulars are not recorded here in detail. The summary is as follows:

TABLE 6.—*Summary of coal reserves on certain known areas in Alberta as estimated by Dr. Allan. See heading of Table 5 and text for explanation of coal areas omitted.*

	Square miles	Average aggregate thickness of coal seams about	Tons per acre 1 ft. thick used in calculations	Estimated tons 2,000 lbs.	Taken at 50% Recoverable
Bituminous coal ...	720	38 ft.	1,800	31,417,344,000	15,708,672,000
Sub-bituminous coal	828	16 ft.	1,700	14,594,432,000	7,297,216,000
Lignite coal	940	12 ft.	1,600	11,500,544,000	5,750,272,000
	2,488			57,512,320,000	28,756,160,000

As noted above, the estimates thus arrived at are then cut in two for the final calculation of coal recoverable in mining. This factor of 50% has to take care, not only of mining losses, but of the local faultings and failures of the seam.

As the Commission moved about the province it questioned witnesses on Dr. Allan's estimated figures, as applied to the particular locality. The results of this inquiry may be summarized by saying that, as to bituminous coal, the estimate was in the main sustained; as to sub-bituminous coal, no witnesses were found who would attempt to give a figure; and as to the lignite coal all the evidence was that, in the opinion of the witnesses concerned, the figure given was still much too high. The final estimate, here used, for the total lignite coal is much lower than the initial figure, on which these witnesses were questioned, so it is just possible that they might now be ready to confirm it. As against the limit, fixed for the above calculations, of seams 2 feet and over, several witnesses pointed out that, under present conditions, any seam under 3½ feet could not be regarded as a commercial seam; although it might possibly be worked later on.

The total production of Alberta mines for the entire period for which there are any records, namely: from the year 1886 down to the end of 1924, was in the neighborhood of 82,000,000 tons. This is 0.28% of the above estimate of workable reserves. In other words, not taking into account the coal areas of Smoky River, Clearwater, Panther or Prairie Creek, the total output from Alberta mines to date has been less than ¼ of 1% of the estimated available coal. On the same basis and taking the year of maximum output (1920—6,908,923, or say seven million tons) the supply is good for about four thousand such years.

One very important fact must not be overlooked. The whole area, treated in the above calculations, will certainly not be found

to be equal in facilities for mining and transportation. This feature will be more marked in some coal areas than others; but, on the average, it is safe to say that there must be a tendency to take up first the most accessible seams; and that mining may be expected to become increasingly difficult as these become exhausted. On the other hand, of course, the territory is large enough for fresh discoveries of coal that will be just as easily worked as anything that is now known. This aspect of the question will be discussed again in connection with the ownership of these coal reserves.

For purposes of comparison, it may be interesting to note that the United States Coal Commission accepted the figures of coal reserves of the United States given by the U.S. Geological Survey at the end of 1918 as follows:

Coal mined since the beginning..	12,809,017,354 tons
Remaining unmined	3,535,690,990,000 "

On this estimate the coal mined in the U.S. to that date was less than 4% of what remained. The unequal division of this coal into various classes will be referred to under U.S. Competition in the Chapter on "Marketing."

Ownership of Coal Resources

The Commission has attempted an approximation to the ownership of the coal resources, as above estimated. The areas, used by Dr. Allan in making his estimate, have been investigated as to ownership by the Dominion Government and by the Canadian Pacific Railway and Hudson's Bay Company, which together are, outside the government, the chief owners of such lands. The area owned by operating companies was obtained by the answers to questionnaires, in the case of reporting mines, and, for the other mines in the province, from the figures given in the Mines Report. The difference between this and the total indicated area is taken as being in the possession of other owners. In an investigation of this sort, there was nothing to be gained by using methods of greater accuracy than the premises warranted. The particular areas indicated were, as already explained, subject to great elements of uncertainty. It would have been possible to examine each of these areas at the Land Titles Office and in the records of the Dominion Government at Ottawa to determine the precise ownership of each; but the above method is undoubtedly sufficiently precise for the purpose. The result, therefore, must be treated with caution. It is subject to the uncertainty of coal of workable quality and quantity being found in the precise place; but it may well be that if absent from that place coal occurs elsewhere to make good the deficiency, in whole or in part, and that the percentage ownership of such coal would not differ greatly from the percentage ownership of the particular areas investigated. On the whole, therefore, the result may be taken as a rough approximation to the ownership or control of the coal reserves, as calculated by Dr. Allan for the purposes of this report.

TABLE 7.—*Approximate control of coal reserves—showing by character of coal and by Divisions and Coal Areas the total estimated reserve and the approximate percentage control thereof by operating companies, by Dominion Government, by C.P.R., and Hudson's Bay Company, and by others. See text for manner in which this estimate was compiled.*

Divisions and Coal Areas	Estimated Reserve Tons 2,000 lbs.	Operating Co's %	Operating Co's Tons	Dominion Gov't %	Dominion Gov't Tons	C.P.R. and H.B. Co. %	C.P.R. and H.B. Co. Tons	Others %	Others Tons
I. Bituminous Coal—									
1. CROWSNEST—									
K. 9 Old Man	2,488,320,000	24	597,196,800	76	1,891,123,200				
K. 10 Crowsnest	6,220,800,000	24	1,492,992,000	45	2,799,360,000	2	124,416,000	29	1,804,032,000
2. CANMORE—									
K. 7 Cascade	6,451,200,000	10	645,120,000	81	5,225,472,000	1	64,512,000	8	516,096,000
K. 8 Highwood	8,294,400,000			71	5,889,024,000			29	2,405,376,000
3. BRAZEAU—									
K. 4 Nordegg	1,119,744,000	39	436,700,160	51	571,069,440			10	111,974,400
4. MOUNTAIN PARK—									
K. 2 Brule	1,866,240,000	47	877,132,800	53	989,107,200				
K. 3 Mountain Park.	4,976,640,000	21	1,045,094,400	52	2,587,852,800			27	1,343,692,800
Total bituminous coal.....	31,417,344,000	16	5,094,236,160	64	19,953,008,640	1	188,928,000	19	6,181,171,200
II. Sub-Bituminous Coal—									
1. CROWSNEST—									
B. 7 Pincher	313,344,000			39	122,204,160			61	191,139,840
2. CANMORE—									
B. 5 Morley	1,468,800,000	1	14,688,000	56	822,528,000	30	440,640,000	13	190,944,000
B. 6 Pekisko	2,176,000,000	2	43,520,000	59	1,283,840,000	12	261,120,000	27	587,520,000
3. BRAZEAU—									
B. 4 Saunders	1,566,720,000	7	109,670,400	88	1,378,713,600			5	78,336,000

II. SUB-BITUMINOUS COAL—*Continued*

Divisions and Coal Areas	Estimated Reserve Tons 2,000 lbs.	%	Operating Co's Tons	%	Dominion Gov't Tons	%	C.P.R. and H.B. Co. Tons	%	Others Tons
4. MOUNTAIN PARK—									
B. 3 Coalspur	6,092,800,000	17	1,035,776,000	58	3,533,824,000			25	1,523,200,000
5. LETHBRIDGE—									
B. 9 Lethbridge	1,175,040,000	24	282,009,600	45	528,768,000	9	105,753,600	22	258,508,800
B. 8 Magrath	626,688,000	1	6,266,880	51	319,610,880	1	6,266,880	47	294,543,360
13. PEACE RIVER—									
B. 1 Halcourt	1,175,040,000	1	11,750,400	98	1,151,539,200			1	11,750,400
Total sub-bituminous coal. . . .	14,594,432,000	10	1,503,681,280	63	9,141,027,840	6	813,780,480	21	3,135,942,400

III. Lignite Coal—

5. LETHBRIDGE—									
B. 12 Taber	614,400,000	5	30,720,000	57	350,208,000	3	18,432,000	35	215,040,000
B. 10 Milk River	1,024,000,000	1	10,240,000	83	849,920,000	4	40,960,000	12	122,880,000
6. MEDICINE HAT—									
B. 16 Empress	5,120,000			100	5,120,000				
B. 13 Redcliff	6,144,000	100	6,144,000						
B. 11 Pakowki	419,840,000	1	4,198,400	92	386,252,800	6	25,190,400	1	4,198,400
7. BROOKS—									
E. 11 Gleichen	61,440,000	19	11,673,600			81	49,766,400		
E. 12 Champion	153,600,000	6	9,216,000	54	82,944,000	20	30,720,000	20	30,720,000
B. 15 Steveville	15,360,000	8	1,228,800	42	6,451,200	50	7,680,000		
B. 14 Brooks	184,320,000	24	44,236,800	21	38,707,200	33	60,825,600	22	40,550,400
8. DRUMHELLER—									
E. 7 Big Valley	215,040,000	12	25,804,800	55	118,272,000	22	47,308,800	11	23,654,400
E. 8 Carbon	709,632,000	12	85,155,840	26	184,504,320	6	42,577,920	56	397,393,920
E. 10 Drumheller	3,072,000,000	15	460,800,000	26	798,720,000	33	1,013,760,000	26	798,720,000
E. 9 Sheerness	261,120,000	18	47,001,600	79	206,284,800			3	7,833,600

III. LIGNITE COAL—*Continued*

Divisions and Coal Areas	Estimated Reserve Tons 2,000 lbs.	Operating Co's %	Operating Co's Tons	Dominion Gov't %	Dominion Gov't Tons	C.P.R. and H.B. Co. %	C.P.R. and H.B. Co. Tons	Others %	Others Tons
9. ARDLEY—									
E. 6 Ardley	537,600,000	27	145,152,000	44	236,544,000	23	123,648,000	6	32,256,000
E. 5 Castor	460,800,000	7	32,256,000	44	202,752,000	42	193,536,000	7	32,256,000
10. PEMBINA—									
E. 14 Whitecourt	30,720,000	6	1,843,200	94	28,876,800				
E. 1 Pembina	1,843,200,000	9	165,888,000	52	958,464,000	10	184,320,000	29	534,528,000
11. EDMONTON—									
B. 19 Rochester	5,120,000			94	4,812,800			6	307,200
E. 2 Edmonton	1,382,400,000	7	96,768,000	36	497,664,000	22	304,128,000	35	483,840,000
12. TOFIELD—									
B. 18 Pakan	16,384,000			97	15,892,480			3	491,520
E. 3 Tofield	307,200,000	11	33,792,000	43	132,096,000	20	61,440,000	26	79,872,000
E. 4 Camrose	107,520,000	30	32,256,000	56	60,211,200	14	15,052,800		
E. 13 Wetaskiwin	30,720,000	1	307,200	56	17,203,200			43	13,209,600
B. 17 Wainwright	16,384,000	3	491,520	50	8,192,000	44	7,208,960	3	491,520
13. PEACE RIVER—									
B. 20 Sexsmith	20,480,000							100	20,480,000
Total lignite coal	11,500,544,000	11	1,245,173,760	45	5,190,092,800	20	2,226,554,880	24	2,838,722,560

SUMMARY

Bituminous coal	31,417,344,000	16	5,094,236,160	64	19,953,008,640	1	188,928,000	19	6,181,171,200
Sub-bituminous coal	14,594,432,000	10	1,503,681,280	63	9,141,027,840	6	813,780,480	21	3,135,942,400
Lignite coal	11,500,544,000	11	1,245,173,760	45	5,190,092,800	20	2,226,554,880	24	2,838,722,560
Total	57,512,320,000	14	7,843,091,200	60	34,284,129,280	5	3,229,263,360	21	12,155,836,160

"Control," as used in the heading of Table 7, includes not only ownership in fee simple but leasehold. The various forms of tenure of coal rights are:

Freehold without royalty;

Freehold with royalty of 7c a ton;

Leasehold from the Dominion Government with a royalty of 5c a ton and an annual rental of $1.00 an acre;

Leasehold from an owner other than the Dominion Government in which case the terms of rental and royalty vary.

The above table, then, shows for the Dominion Government what it still owns unleased and the same for the C.P.R. and H.B. Company. For operating companies the estimate is based on the area they return as controlled by them whether by way of freehold or leasehold and as already explained the estimate for "others" is the balancing figure. An approximation to the different forms of tenure by operating companies is given in the next chapter on mining development.

CHAPTER III.

MINING DEVELOPMENT AND OUTPUT

Brief History

It is important to emphasize the comparatively recent development of the coal mining industry of Alberta. All early explorers mention the coal exposures that occur so prominently in various parts of the province and coal from these exposures was used by the Hudson's Bay Company and other pioneers. While the records are somewhat incomplete, it may be well to set down what appear to have been the beginnings of mining on a commercial scale as follows:

Medicine Hat	Year 1883
Lethbridge	" 1886
Canmore	" 1888
Edmonton	" 1891
Frank and Blairmore	" 1900
Bankhead and Coleman	" 1903
Carbon and Three Hills	" 1906
Tofield	" 1907
Brazeau and points on the Canadian Northern and Grand Trunk Pacific Rys. West of Edmonton	" 1910
Drumheller	" 1911

The rate of development, so far as regards volume of output, will appear from the figures given at the end of this chapter. As to number of mines, the following is the record from the Mines Reports of the province:

TABLE 8—*Record of coal mines in Alberta by numbers.*

Year	Mines Opened	Mines Abandoned	Mines in Operation at any time During Year Given as
1905	22	.....	?
1906	16	2	61
1907	35	6	98
1908	19	6	112
1909	?	?	?
1910	42	7	154
1911	68	26	224
1912	46	8	243
1913	45	72	289
1914	42	45	264
1915	58	72	280
1916	44	54	279
1917	48	38	283
1918	70	71	317
1919	47	34	276
1920	38	17	288
1921	90	17	333
Previous to 1921	.....	33	.....
1922	100	44	379
1923	59	87	362
1924	60	87	399

Previous to the year 1905, the figures include what is now the province of Saskatchewan and so cannot be used for purposes of comparison. The record is evidently complicated by mines closed temporarily and later abandoned, an adjusting entry from this cause occurring in the year 1921. The figures are taken from the various Mines' Reports but, even allowing for the overlapping of the closing and opening figures of any year, there are obvious discrepancies. However, taken roughly, it will be seen that the greatest activity in the opening of new mines took place in the years 1911, 1918 and especially in 1921 and 1922. On the other hand the years 1923 and 1924 show the greatest recorded abandonments. However, the peak as to the number of so-called mines in operation in the province is not reached until the last recorded year, namely 1924, when it is given at 399.

The Mines Branch Report for 1924 gives a list by number and name of 1051 "mines" that had been opened in the province of which 674 have been finally abandoned and 377 remained open or were re-opened, consisting of:

Mines in operation at 31st December, 1924.....	309
Mines closed but not abandoned	68
	377

From all this, it will appear that any problems presented by this multiplicity of mines are present problems and show no signs of solving themselves with lapse of time. These problems will be discussed in Chapter IX of the Report.

Abandoned Mines

Mr. John T. Stirling, Chief Inspector of Mines, was requested to prepare an estimate of the amount of money invested and the estimated daily production at the time of abandonment of the abandoned mines. Accordingly he prepared a statement which is given in full as an Exhibit to the oral evidence (Appendix V, not printed). The summary of this statement is as follows:

TABLE 9—*Summary Statement re abandoned coal mines:*

	Estimated amount of money invested in abandoned mines	Estimated daily production at time of abandonment
Lignite	$2,868,312.00	10,838 tons
Sub-Bituminous	920,375.00	1,581 "
Anthracite and Bituminous.....	7,963,500.00	3,665 "
	$11,752,187.00	16,084 tons

It must be emphasized that these figures are only an estimate and no great degree of accuracy can be claimed for them. The figure is not the nominal capitalization of the Companies concerned but an estimate of the amount of money that had actually been invested.

Later, at the request of the Commission, Mr. Stirling prepared and submitted a statement of the estimated amount invested in

abandoned mines, according to the years in which the abandonment took place, the summary of which latter statement is as follows:

TABLE 10—*Statement of abandoned coal mines by years, showing estimated amount of money invested.*

Year Abandoned	Lignite	Sub-Bituminous	Bituminous
1892	.....	.....	$109,500
1898	$1,500	.....	.....
1899	605	.....	.....
1900	.....	$300	.....
1901	150	.....	.....
1902	600	.....	.....
1903	35,500	.....	.....
1904	7,800	200	270,000
1905	1,550	.....	.....
1906	17,350	1,200	14,500
1907	1,750	.....	.....
1908	64,500	200	.....
1909	45,550	300	.....
1910	38,500	1,200	.....
1911	48,925	350	50,000
1912	1,050	3,500	.....
1913	440,350	6,600	823,500
1914	164,550	2,200	20,000
1915	174,675	157,300	3,191,500
1916	283,825	700	250,000
1917	66,505	150	.....
1918	18,950	300	1,200,900
1919	138,837	2,850	25,000
1920	3,150	246,775	.....
1921	109,350	65,300	405,000
1922	19,825	35,000	.....
1923	335,795	360,450	1,577,100
1924	719,420	35,500	26,500
1925	127,750	.....	.....
Total	$2,868,312	$920,375	$7,963,500

Lignite	$2,868,312.00
Sub-Bituminous	920,375.00
Bituminous	7,963,500.00
	$11,752,187.00

Assembling Mr. Stirling's estimate by character of coal and coal areas, gives the following:

TABLE 11—*Estimate of amount of money invested in abandoned coal mines arranged by character of coal and divisions.*

BITUMINOUS

Division	Coal Area	Amount
1. Crowsnest—		
	K. 10 Crowsnest	$5,250,000
	K. 9 Old Man	.....
		$5,250,000
2. Canmore—		
	K. 7 Cascade	$2,130,000
	K. 8 Highwood	100,000
		$2,230,000

BITUMINOUS—*Continued.*

Division	Coal Area		Amount	
3. Brazeau—				
	K. 4	Nordegg	.....	
	K. 5	Clearwater	.....	
	K. 6	Panther	.....	
4. Mountain Park—				
	K. 1	Smoky River	.....	
	K. 2	Brule	$ 475,000	
	K. 3	Mountain Park	8,500	
			$ 483,500	
				$7,963,500

SUB-BITUMINOUS

1. Crowsnest—				
	B. 7	Pincher	$ 6,050	
2. Canmore—				
	B. 5	Morley	$ 167,100	
	B. 6	Pekisko	5,725	
			$ 172,825	
3. Brazeau—				
	B. 4	Saunders	$ 36,500	
4. Mountain Park—				
	B. 2	Prairie Creek	.....	
	B. 3	Coalspur	$ 705,000	
				$ 920,375

LIGNITE

5. Lethbridge—				
	B. 9	Lethbridge	$ 935,525	
	B. 8	Magrath	4,800	
	B. 12	Taber	96,755	
	B. 10	Milk River	5,450	
			$1,042,530	
6. Medicine Hat—				
	B. 16	Empress	$ 650	
	B. 13	Redcliff	6,250	
	B. 11	Pakowki	2,700	
			$ 9,600	
7. Brooks—				
	E. 11	Gleichen	$ 2,875	
	E. 12	Champion	23,800	
	B. 15	Steveville	1,170	
	B. 14	Brooks	5,150	
			$ 32,995	
8. Drumheller—				
	E. 7	Big Valley	$ 7,000	
	E. 8	Carbon	39,387	
	E. 10	Drumheller	460,150	
	E. 9	Sheerness	13,625	
			$ 520,162	
9. Ardley—				
	E. 6	Ardley	$ 25,750	
	E. 5	Castor	21,375	
			$ 47,125	
10. Pembina—				
	E. 14	Whitecourt	.....	
	E. 1	Pembina	$ 223,100	

Most profitable field shows largest loss

LIGNITE—*Continued.*

Division	Coal Area		Amount	
11. Edmonton—				
	B. 19	Rochester	$ 600	
	E. 2	Edmonton	935,750	
			$ 936,350	
12. Tofield—				
	B. 18	Pakan	$ 500	
	E. 3	Tofield	1,600	
	E. 4	Camrose	46,150	
	E. 13	Wetaskiwin	1,000	
	B. 17	Wainwright . . .	500	
			$ 49,750	
13. Peace River—				
	B. 1	Halcourt	$ 1,900	
	B. 20	Sexsmith	500	
			$ 2,400	
	No area		$ 4,300	$2,868,312

RECAPITULATION

Bituminous	$ 7,963,500
Sub-Bituminous	920,375
Lignite	2,868,312
Total invested in abandoned mines. . . .	$11,752,187

Some of the witnesses, who appeared before the Commission, expressed the view that this estimate was very much too high and thought it was impossible to estimate what had been lost, without knowing fully the financial history of the Company prior to abandonment. Other witnesses were inclined to agree with the figures. The members of the Commission have had other evidence of individual cases in the tabulation made by Mr. Stirling or have had personal knowledge of some of them and, on the whole, see no reason to doubt that the estimate is as accurate as such an estimate can be and is worth recording as a fact of the coal industry of Alberta.

Need of Geological and Engineering Advice: While, in the majority of cases, the abandonment of mines just discussed is thought to have been due to a lack of markets or in other words to an over-development of the industry, there were some cases in which the coal seams proved disappointing. It may be appropriate, therefore, to record the views expressed by some of the witnesses, as to the need of proper geological and engineering work in advance of undertaking any development of coal. The geologist works out the structure and sequence of the rocks as a primary condition to expecting to find a seam of coal and judges by the structure what the mining difficulties will be. The mining engineer must then be called in to report on the problems of suitability, quantity, accessibility and cost. With the failures of the past as a warning, it is clear that, in the future, there cannot be too careful preliminary study of the geological, engineering and commercial factors before embarking on any new enterprise.

Analysis of Mines by Output

A number of those who appeared before the Commission stressed the fact that the bulk of the production in the province came from a comparatively small number of mines; and that it was in the remaining mines of very limited average output that many of the difficulties occurred. One stated that, in the steam coal industry, of the mines that had been members of the Western Canada Coal Operators' Association, there were eleven which operated continuously from the time they were opened down to 1921; that these mines produced 85% of all the bituminous coal of the province; and that only one of these mines had been abandoned. In connection with this statement, it must be noted that reference was made to mines that were members of the Western Canada Coal Operators' Association; there had been other bituminous mines closed down; but the fact remains that, in the mines producing the greater part of the total tonnage, there is a degree of stability far in excess of that which obtains among the remaining mines. Statistics based on numbers alone include as "mines" prospects and farmers' mines which, by their lack of permanence, give a wrong impression as to the general state of the industry.

Since the record for the year 1924 is interfered with by the strike that occurred, it will be better to call attention in this connection to the year 1923. Rearranging the statistics given in the Mines Report for that year gives the following:

TABLE 12—*Analysis by annual output of coal mines operating in 1923 according to report by Mines Branch.*

BITUMINOUS MINES

	No. of Mines	% of Total Number	Total Output Tons	Average Output Tons	% of Total Output
Under 10,000 tons	0				
From 10,000 to 50,000	1	8.3	13,628	13,628	0.4
From 50,000 to 100,000	0				
From 100,000 to 200,000	2	16.7	336,967	168,483	10.3
From 200,000 to 300,000	6	50.0	1,631,210	271,879	50.4
From 300,000 to 400,000	1	8.3	339,068	339,068	10.5
Over 400,000	2	16.7	920,741	460,370	28.4
	12	100.0	3,241,614	270,134	100.0

That is to say, taken cumulatively and beginning with the larger mines:

16.7% of the total number or 2 mines produced 28.4% of the output.
25.0% of the total number or 3 mines produced 38.9% of the output.
75.0% of the total number or 9 mines produced 89.3% of the output.
91.7% of the total number or 11 mines produced 99.6% of the output.

SUB-BITUMINOUS MINES

	No. of Mines	% of Total Number	Total Output Tons	Average Output Tons	% of Total Output
Under 10,000 tons	19	67.9	22,719	1,196	4.9
From 10,000 to 50,000	7	25.0	152,275	21,754	32.9
From 50,000 to 100,000	0				
From 100,000 to 200,000	2	7.1	288,467	144,233	62.2
	28	100.0	463,461	16,552	100.0

Taken cumulatively:

7.1% of the total number or 2 mines produced 62.2% of the output.
32.1% of the total number or 9 mines produced 95.1% of the output.

LIGNITE MINES

	No. of Mines	% of Total Number	Total Output Tons	Average Output Tons	% of Total Output
Under 10,000 tons	273	85.0	288,673	1,057	9.1
From 10,000 to 50,000	21	6.5	414,995	19,762	13.1
From 50,000 to 100,000	20	6.2	1,388,256	69,413	43.9
From 100,000 to 200,000	6	1.9	706,657	117,776	22.4
From 200,000 to 300,000	0				
From 300,000 to 400,000	1	0.4	363,160	363,160	11.5
Over 400,000	0				
	321	100.0	3,161,741	9,894	100.0

Taken cumulatively:

0.4% of the total number or 1 mine produced 11.5% of the output.
2.3% of the total number or 7 mines produced 33.9% of the output.
8.5% of the total number or 27 mines produced 77.8% of the output.
15.0% of the total number or 48 mines produced 90.9% of the output.

ANTHRACITE MINES

	No. of Mines	% of Total Number	Total Output Tons	Average Output Tons	% of Total Output
Under 10,000 tons	1	100.0	107		100.0

ALL MINES

	No. of Mines	% of Total Number	Total Output Tons	Average Output Tons	% of Total Output
Under 10,000 tons	293	80.9	311,499	1,063	4.6
From 10,000 to 50,000	29	8.0	580,898	20,031	8.4
From 50,000 to 100,000	20	5.5	1,388,256	69,413	20.2
From 100,000 to 200,000	10	2.8	1,332,091	133,209	19.4
From 200,000 to 300,000	6	1.6	1,631,210	271,835	23.8
From 300,000 to 400,000	2	0.6	702,228	351,114	10.2
Over 400,000	2	0.6	920,741	460,370	13.4
	362	100.0	6,866,923	17,862	100.0

Taken cumulatively:

0.6% of the total number or 2 mines produced 13.4% of the output.
1.2% of the total number or 4 mines produced 23.6% of the output.
2.8% of the total number or 10 mines produced 47.4% of the output.
5.6% of the total number or 20 mines produced 66.8% of the output.
11.1% of the total number or 40 mines produced 87.0% of the output.
19.1% of the total number or 69 mines produced 95.4% of the output.

Thus 69 mines or less than one-fifth of the total number of mines produced over 95% of the total output. This comparatively small number of mines, therefore, constitutes the real coal industry of Alberta.

A further analysis of the "mines" in operation in 1923 producing under 10,000 tons gives the following:

TABLE 13—*Summary of number of mines in 1923 by output.*

Mines producing in 1923	Number of Mines	Percentage of Total Number	Cumulative Total	Cumulative Pctge. of Ttl. Number
Under 500 tons	163	45.0	163	45.0
From 500 to 1,000 tons	54	14.9	217	59.9
From 1,000 to 2,000 tons	42	11.6	259	71.5
From 2,000 to 5,000 tons	17	4.7	276	76.2
From 5,000 to 10,000 tons	17	4.7	293	80.9
From 10,000 to 50,000 tons	29	8.0	322	88.9
From 50,000 to 100,000 tons	20	5.5	342	94.4
From 100,000 to 200,000 tons	10	2.8	352	97.2
From 200,000 to 300,000 tons	6	1.6	358	98.8
From 300,000 to 400,000 tons	2	.6	360	99.4
Over 400,000 tons	2	.6	362	100.0
	362	100.0		

Development in Each Division and Coal Area

A brief account is here given of the mining development in each division and each coal area taking them in order of Appendix II to this Report. See Table 18 at the end of this chapter for summary of output since 1918 by character of coal and divisions.

DIVISION NO. 1—CROW'S NEST

Coal Area—K. 9, Old Man: There are no producing mines operating in this area. The tests of prospects show the coal to be similar to the Crow's Nest area.

K. 10—Crowsnest: Character of coal—bituminous. The mines in this area produce steam and railroad coal and a limited amount of lump coal for commercial purposes. The workable seams range in thickness from 4 ft. to 20 ft. and are much faulted and folded. The Greenhill Colliery at Blairmore has an up to date air washery and other mines are contemplating installing similar equipment. The mines are located on the C. P. R. The production from this area has been:

	Tons of 2,000 lbs.
1923	1,604,248
1924 (strike)	918,945
1925	1,132,300

B. 7—Pincher: Character of coal—sub-bituminous. As the following figures will show development in this area is on a small scale. Production from this area has been:

	Tons of 2,000 lbs.
1923	5,852
1924	6,499
1925	2,097

Division No. 2—Canmore

Coal Area K. 7—Cascade: Character of coal—bituminous and anthracite. The mines at Bankhead, now abandoned, briquetted the anthracite fines. A briquetting plant has been installed at Canmore. The output as marketed consists of bituminous coal for railway and other steam purposes and briquettes for domestic heating. The seams operated are from 5 to 8 feet in thickness. The mines are on the C. P. R. The production in this area has been:

		Tons of 2,000 lbs.
1923		264,554
1924	(strike)	134,827
1925		173,579

K. 8—Highwood: No production yet from this area as it lacks railway facilities.

B. 5—Morley: Character of coal—sub-bituminous; being mined in small quantities for local use only. The production in this area has been:

	Tons of 2,000 lbs.
1924	121
1925	151

B. 6—Pekisko: Character of coal—sub-bituminous; being mined in small quantities for local use only. The production in this area has been:

	Tons of 2,000 lbs.
1923	3,148
1924	4,549
1925	4,415

Division No. 3—Brazeau

Coal Area K. 4—Nordegg: Character of coal—bituminous. Two workable seams one 6 feet and the other 12 feet. Mines on the C. N. R. The production has been:

		Tons of 2,000 lbs.
1923		493,378
1924	(strike)	174,772
1925		216,844

Coal Area K. 5—Clearwater: No development yet; waiting railway transportation.

Coal Area K. 6—Panther: No development yet; waiting railway transportation.

Coal Area B. 4—Saunders: Character of coal—sub-bituminous. Coal seams being worked from 4 feet to 6 feet in thickness. Mines on the C. N. R. The production from this area has been:

	Tons of 2,000 lbs.
1923	73,295
1924	68,546
1925	86,769

Division No. 4—Mountain Park

Coal Area K. 1—Smoky River: No development yet; waiting railway transportation.

Coal Area K. 2—Brule: Character of coal—bituminous. One seam 6 to 8 feet; one seam 10 to 15 feet. Used for railroad purposes. Mines on the C. N. R. The production from this area has been:

	Tons of 2,000 lbs.
1923	248,659
1924	6,547
1925	61,049

Coal Area K. 3—Mountain Park: Character of coal—bituminous. Used for railway and steam purposes. There are several workable seams in this area ranging from 5 to 30 feet in thickness. The mines are located on the C. N. R. The production in this area has been:

	Tons of 2,000 lbs.
1923	634,474
1924 (strike)	286,297
1925	561,428

Coal Area B. 2—Prairie Creek: No development in this area except for local use.

Coal Area B. 3—Coalspur: Character of coal—sub-bituminous; for domestic purposes and from the stripping pits for railroad purposes. The mines are on the C. N. R. The seams of coal that are being worked are from 5 to 16 feet and the stripping pits show width of coal at the surface up to 150 feet. The coal production in this area has been:

	Tons of 2,000 lbs.
1923	377,574
1924	506,050
1925	488,403

Division No. 5—Lethbridge

Coal Area B. 9—Lethbridge: Character of coal—sub-bituminous and lignite but as it is all classed in the Mines Report as "domestic coal" it is here treated of as lignite. The seams run from 3 to 5 feet in thickness. The mines are on the C. P. R. Production in this area has been:

	Tons of 2,000 lbs.
1923	657,032
1924 (strike)	409,099
1925	669,119

Coal Area B. 8—Magrath: Character of coal—lignite. Developed for local use chiefly. Mines are on the C. P. R. The production in this area has been:

	Tons of 2,000 lbs.
1923	2,051
1924	2,712
1925	2,662

Coal Area B. 12—Taber: Character of coal—lignite. Seams are from 3 feet 6 inches to 4 feet 6 inches. The mines are on the C. P. R. The production in this area has been:

	Tons of 2,000 lbs.
1923	33,233
1924	94,811
1925	82,998

Coal Area B. 10—Milk River: Character of coal—lignite. The mines are on the C. P. R. Production in this area has been:

	Tons of 2,000 lbs.
1923	3,604
1924	4,142
1925	3,303

Division No. 6—Medicine Hat

Coal Area B. 16—Empress: No development.

Coal Area B. 13—Redcliff: Character of coal—lignite. The mines are on the C. P. R. The seam is about 5 feet. Production in this area has been:

	Tons of 2,000 lbs.
1923	20,761
1924	48,327
1925	44,637

Coal Area B. 11—Pakowki: Character of coal—lignite. Development for local use only.

Division No. 7—Brooks

Coal Area E. 11—Gleichen: Character of coal—lignite. Development for local use only. The production from this area has been:

	Tons of 2,000 lbs.
1923	6,406
1924	4,933
1925	4,373

Coal Area E. 12—Champion: Character of coal—lignite. Development for local use only. Production from this area has been:

	Tons of 2,000 lbs.
1923	9,321
1924	9,933
1925	10,473

Coal Area B. 15—Steveville: Character of coal—lignite. Development for local use only. Production from this area has been:

	Tons of 2,000 lbs.
1923	922
1924	739
1925	525

Coal Area B. 14—Brooks: Character of coal—lignite. Seam 4 feet 8 inches. Mines on the C. P. R. Production from this area has been:

	Tons of 2,000 lbs.
1923	7,251
1924	6,351
1925	6,049

Division No. 8—Drumheller

Coal Area E. 7—Big Valley: Character of coal—lignite. Seam 5 feet. Mines on the C. N. R. Production from this area has been:

	Tons of 2,000 lbs.
1923	45,380
1924	54,019
1925	33,351

Coal Area E. 8—Carbon: Character of coal—lignite. Seams 4 feet to 5 feet. Mines on C. P. R. and C. N. R. Production in this area has been:

	Tons of 2,000 lbs.
1923	101,454
1924	185,536
1925	149,832

Coal Area E. 10—Drumheller: Character of coal—lignite. The two main seams being worked are the so-called upper and lower seam. Seams are from 3 to 9 feet. Mines are on the C. P. R. and C. N. R. Production in this area has been:

	Tons of 2,000 lbs.
1923	1,239,253
1924	1,112,757
1925	1,109,273

Coal Area E. 9—Sheerness: Character of coal—lignite. Seams are 6 and 7 feet. Mines are on the C. N. R. Production from this area has been:

	Tons of 2,000 lbs.
1923	29,240
1924	42,438
1925	35,090

Division No. 9—Ardley

Coal Area E. 6—Ardley: Character of coal—lignite. Thickness of seam 4 feet to 6 feet. Mines on C. P. R. and C. N. R. Production from this area has been:

	Tons of 2,000 lbs.
1923	11,911
1924	13,280
1925	9,222

Coal Area E. 5—Castor: Character of coal—lignite. Thickness of seam 4 feet to 7 feet. There are a large number of small mines in this area producing for local use. Production from this area has been:

	Tons of 2,000 lbs.
1923	27,594
1924	29,922
1925	37,463

Division No. 10—Pembina

Coal Area E. 14—Whitecourt: Character of coal—lignite. Development for local use only. Production from this area has been:

	Tons of 2,000 lbs.
1923	107
1924	443
1925	61

Coal Area E. 1—Pembina: Character of coal—lignite. Two seams, one 7 feet 6 inches and one 28 feet. Mines are on the C. N. R. Production in this area has been:

	Tons of 2,000 lbs.
1923	168,139
1924	197,024
1925	184,811

Division No. 11—Edmonton

Coal Area B. 11—Rochester: No development.

Coal Area E. 2—Edmonton: Character of coal—lignite. Seams 5 feet to 9 feet. Mines on C. P. R. and C. N. R. Production from this area has been:

	Tons of 2,000 lbs.
1923	616,140
1924	675,285
1925	558,710

Division No. 12—Tofield

Coal Area B 18—Pakan: No development.

Coal Area E. 3—Tofield: Character of coal—lignite. Seams 6 to 7 feet. Mines on C. N. R. Production from this area has been:

	Tons of 2,000 lbs.
1923	106,214
1924	119,811
1925	138,268

Coal Area E. 4—Camrose: Character of coal—lignite. Seams 5 feet 6 inches to 7 feet. Mines on C. P. R. and C. N. R. Production from this area has been.

	Tons of 2,000 lbs.
1923	71,628
1924	81,473
1925	72,031

Coal Area E. 13—Wetaskiwin: Development for local use only. Production from this area has been:

	Tons of 2,000 lbs.
1923	
1924	12
1925	670

Coal Area B. 17—Wainwright: Development for local use only. Production from this area has been:

	Tons of 2,000 lbs.
1924	160
1925	35

Division No. 13—Peace River

Coal Area B. 1—Halcourt: Development for local use only. Production from this area has been:

	Tons of 2,000 lbs.
1923	193
1924	658
1925	695

Coal Area B. 20—Sexsmith: Development for local use only. Production from this area has been:

	Tons of 2,000 lbs.
1923	458
1924	123
1925	53

Form of Tenure of Coal and Surface Rights

In the General Questionnaire, the operating companies were asked to report the area of the coal rights held by them under the different forms of tenure of such rights, which are as follows:

Freehold without royalty.

Freehold with royalty of 7c. a ton.

Leasehold from the Dominion Government with royalty of 5c. a ton and an annual rental of $1.00 an acre.

Leasehold from an owner other than the Dominion Government, in which case the terms of rental and royalty vary.

The replies received to these questions assembled by character of coal and divisions were as follows:

TABLE 14—*Form of tenure of coal rights by reporting companies. See explanation below of percentage reporting.*

	Freehold without Royalty. Acres	Freehold with Royalty at 7c a ton. Acres	Leasehold with Royalty at 5c ton and annual rent. of $1 an acre. Acres	Leasehold from owner other than Dom. Govt. Acres	Any other form of tenure. Acres
BITUMINOUS—					
1. Crowsnest	7,623.06	15,408.77	8,168.21	480	
2. Canmore	9,553				
3. Brazeau			8,983.13		
4. Mountain Park (99.6% Reporting.)			28,042.82		
Total for Bituminous	17,176.06	15,408.77	45,194.16	480	
SUB-BITUMINOUS—					
3. Brazeau			2,407.61		
4. Mountain Park (88.6% Reporting.)			13,440		8.00
Total for Sub-Bituminous			15,847.61		8.00

	Freehold without Royalty.	Freehold with Royalty at 7c a ton.	Leasehold with Royalty at 5c ton and annual rent. of $1 an acre.	Leasehold from owner other than Dom. Govt.	Any other form of tenure.
	Acres	Acres	Acres	Acres	Acres
LIGNITE—					
5. Lethbridge	10,606.30	17,138.39	9,861.40	443	290.30
6. Medicine Hat . . .			640	2,700	1,260
7. Brooks		5,306			
8. Drumheller	7,810.40	120	18,867.95	3,015.60	60
9. Ardley			143.75		
10. Pembina		2,347.10	1,728.72		
11. Edmonton	190	80		2,268.40	
12. Tofield	160	160	260	240	
(80.2% Reporting.)					
Total for Lignite . . .	18,766.70	25,151.49	31,501.82	8,667	1,610.3
Total for Province . . .	35,942.76	40,560.26	92,543.59	9,147	1,618.30
(89.9% Reporting.)					

The percentage reporting given under each character of coal means that the information tabulated was from the mines which produced that percentage of the total 1923 output. This indicates the extent of the reporting base. As stated elsewhere the year 1923 is taken as the standard because the record for that year was not complicated by strike conditions.

The questionnaire to operators asked them to report the area of their respective workings as at the 1st December, 1924, the amount of coal they had extracted to date from these workings and the amount that they estimated was still to be extracted from this area. In another place, they were asked to state what percentage extraction they were getting. When the attempt was made to compile the replies, this was found to be impossible. While many of the operators had understood the questions in the way they were intended and replied accordingly, a number of others had obviously given their estimate of coal resources in their entire holdings. Many others did not reply at all to these questions. Probably uniform information of this character suitable for presenting as an aggregate result could only be secured by having a direct investigation made by engineers visiting each mine.

The replies to the questionnaires compiled in a manner similar to the foregoing give the following areas of surface rights owned and leased by 65 reporting companies which together produced 87.8% of the total based on the 1923 output.

TABLE 15—*Area of surface rights owned and leased by operating companies.*

BITUMINOUS MINES

Division No.		Area of Surface Rights Owned Acres	Area of Surface Rights Leased Acres
1.	Crowsnest	13,581.798	376.4
2.	Canmore		9,633
3.	Brazeau		479.36
4.	Mountain Park		763.4
Total bituminous mines (99.6% reporting.)		13,581.798	11,252.16

SUB-BITUMINOUS MINES

Division No.		Area of Surface Rights Owned Acres	Area of Surface Rights Leased Acres
3.	Brazeau		160.91
4.	Mountain Park		338.9
Total sub-bituminous mines (89.3% reporting.)			499.81

LIGNITE MINES

Division No.		Area of Surface Rights Owned Acres	Area of Surface Rights Leased Acres
5.	Lethbridge	8,825.35	340.
6.	Medicine Hat	511	1,900
7.	Brooks	960	
8.	Drumheller	1,622.82	523
9.	Ardley	60	4.75
10.	Pembina	1,472	1,200
11.	Edmonton	12.33	702
12.	Tofield	680	
Total lignite mines (75.6% reporting.)		14,143.5	4,669.75

FINAL SUMMARY

Division No.	Area of Surface Rights Owned Acres	Area of Surface Rights Leased Acres
Bituminous mines	13,581.798	11,252.16
Sub-bituminous mines		499.81
Lignite mines	14,143.5	4,669.75
Total all mines (87.8% reporting.)	27,725.298	16,421.72

Estimated Capacity of Present Alberta Mines

In the questionnaire to operators, they were asked to state what they estimated to be the daily capacity of their mines as at the 1st day of December, 1924. Like the former tabulations, replies were received from mines representing about 90% of the industry. For the other mines, which did not report their capacity directly, a round figure has been taken a little in excess of the output these mines have achieved in the past. The table, then, is based on the reports from the majority of the mines and a rather rough estimate for the remainder but is believed to be a

fair approximation to the tonnage capacity. It has been assembled by character of coal and divisions as the estimated daily capacity in short tons and then summarized as a corresponding yearly capacity assuming 300 days' operation. Of course, as is stated clearly elsewhere in the report, operation for 300 days has never been achieved and is not in prospect; so that the total figure reached of 14,823,000 tons per annum is purely an ideal output, assuming that conditions change to the extent of permitting continuous operation for the mines now in existence. A more practical figure would be arrived at by assuming 300 days' operation for the bituminous mines and 150 days' operation for the sub-bituminous and lignite mines. Calculating the capacity in this way would give a total for the province of over 10,000,000 tons or 50% more than the highest yearly total yet reached.

TABLE 16—*Showing estimated daily capacity of present mines in Alberta divided according to character of coal and coal divisions.*

Division	Estimated Daily Capacity
BITUMINOUS MINES	
	Tons
1. Crowsnest	9,920
2. Canmore	1,800
3. Brazeau	4,000
4. Mountain Park	5,500
Estimated total, bituminous mines	21,220
SUB-BITUMINOUS MINES	
1. Crowsnest	60
2. Canmore	10
3. Brazeau	550
4. Mountain Park	3,390
Estimated total, sub-bituminous mines	4,010
LIGNITE MINES	
5. Lethbridge	4,540
6. Medicine Hat	250
7. Brooks	160
8. Drumheller	12,170
9. Ardley	270
10. Pembina	1,300
11. Edmonton	3,960
12. Tofield	1,330
Estimated total, lignite mines	23,980

SUMMARY

	Estimated Daily Capacity (Tons)	Estimated Yearly Capacity at 300 Days (Tons)
Bituminous mines	21,220	6,366,000
Sub-bituminous mines	4.010	1,203,000
Lignite mines	23,980	7,194,000
Estimated total all mines	49,210	14,763,000

Output

For purposes of reference, it is desirable to reproduce here the table of annual production of coal from mines in Alberta, with values as published in the Annual Report of the Mines Branch. This table is taken from reports prepared by the Dominion Bureau of Statistics. The figures of production for the year 1925 have been added from the records of the Mines Branch here. For 1924 and prior the figures of output differ slightly between the Dominion Bureau of Statistics and the Alberta Mines Branch but the discrepancy is not great enough to be of any importance.

TABLE 17—*Output of Alberta mines and value of same as given by the Dominion Bureau of Statistics up to year 1924.*

Calendar Year	Short Tons	Value
1886	43,220	$ 81,112
1887	74,152	157,577
1888	115,124	183,354
1889	97,364	179,640
1890	128,753	198,298
1891	174,131	437,243
1892	178,970	460,605
1893	230,070	586,260
1894	184,940	473,827
1895	169,885	382,526
1896	209,162	581,832
1897	242,163	630,408
1898	315,088	787,720
1899	309,600	774,000
1900	311,450	778,625
1901	340,275	850,687
1902	402,819	960,601
1903	495,893	1,117,541
1904	661,732	1,404,524
1905	931,917	1,993,915
1906	1,246,360	2,614,762
1907	1,591,579	3,836,286
1908	1,685,661	4,127,311
1909	1,994,741	4,838,109
1910	2,894,469	7,065,736
1911	1,511,036	3,979,264
1912	3,240,577	8,113,525
1913	4,014,755	10,418,941
1914	3,683,015	9,350,392
1915	3,360,818	8,283,079
1916	4,559,054	11,386,577
1917	4,736,368	14,153,685
1918	5,972,816	20,537,287
1919	4,933,660	18,205,205
1920	6,907,765	30,186,933
1921	5,909,217	27,246,514
1922	5,990,911	24,351,913
1923	6,854,397	28,018,303
1924	5,189,739	18,884,318
Total	81,893,646	$268,618,435

Output, 1925, according to Mines Branch, 5,883,394.

In the introductory chapter, it was explained that the substitution, on the 1st January, 1925, of the new "coal areas" for

the previous "districts" meant a break in continuity of the statistics. The divisions used for the purposes of this report are made up by a grouping of the new coal areas. In the following table of output by character of coal and divisions, the old districts have been fitted in as closely as possible to the divisions. The resulting figures are correct enough for the purpose for the years 1917-1922, inclusive, and for the remaining years they are entirely accurate because the production for these later years has been reassembled by the new coal areas.

TABLE 18—*Output of Alberta mines since 1917 by character of coal and divisions (see above explanation).*

BITUMINOUS MINES

Year	Division	Tons	
1917	1. Crowsnest	1,193,313	
	2. Canmore	196,233	
	3. Brazeau	266,897	
	4. Mountain Park (includes sub-bit.)	550,427	
			2,206,870
1918	1. Crowsnest	1,601,486	
	2. Canmore	274,709	
	3. Brazeau	371,561	
	4. Mountain Park (includes sub-bit.)	734,577	
			2,982,333
1919	1. Crowsnest	1,187,966	
	2. Canmore	201,891	
	3. Brazeau	308,990	
	4. Mountain Park (includes sub-bit.)	626,940	
			2,325,787
1920	1. Crowsnest	1,775,529	
	2. Canmore	275,511	
	3. Brazeau	456,415	
	4. Mountain Park (includes sub-bit.)	911,566	
			3,419,021
1921	1. Crowsnest	1,272,181	
	2. Canmore	206,267	
	3. Brazeau	479,735	
	4. Mountain Park (includes sub-bit.)	939,197	
			2,897,380
1922	1. Crowsnest	1,026,581	
	2. Canmore	169,448	
	3. Brazeau	321,470	
	4. Mountain Park	696,774	
			2,214,273
1923	1. Crowsnest	1,600,656	
	2. Canmore	264,447	
	3. Brazeau	493,378	
	4. Mountain Park	883,133	
			3,241,614
1924	1. Crowsnest	912,664	
	2. Canmore	134,827	
	3. Brazeau	174,772	
	4. Mountain Park	292,844	
			1,515,107
1925	1. Crowsnest	1,132,300	
	2. Canmore	173,579	
	3. Brazeau	216,844	
	4. Mountain Park	622,477	
			2,145,200

NOTE: Sub-bituminous coal outputs are not separately shown until 1922.

SUB-BITUMINOUS MINES

Year	Division	Tons	
1922	1. Crowsnest	10,850	
	2. Canmore	2,725	
	3. Brazeau	74,434	
	4. Mountain Park	547,064	
			635,073
1923	1. Crowsnest	9,444	
	2. Canmore	3,148	
	3. Brazeau	73,295	
	4. Mountain Park	377,574	
			463,461
1924	1. Crowsnest	12,680	
	2. Canmore	4,670	
	3. Brazeau	68,546	
	4. Mountain Park	506,050	
			591,946
1925	1. Crowsnest	2,097	
	2. Canmore	4,566	
	3. Brazeau	86,769	
	4. Mountain Park	488,403	
			581,835

LIGNITE MINES

1917	5. Lethbridge	819,317	
	6. Medicine Hat	14,846	
	7. Brooks	16,718	
	8. Drumheller	760,558	
	9. Ardley	28,767	
	10. Pembina	103,356	
	11. Edmonton	661,241	
	12. Tofield	132,803	
	13. Peace River	223	
			2,537,829
1918	5. Lethbridge	1,060,290	
	6. Medicine Hat	19,028	
	7. Brooks	18,422	
	8. Drumheller	1,001,159	
	9. Ardley	27,404	
	10. Pembina	128,645	
	11. Edmonton	659,426	
	12. Tofield	122,651	
			3,037,025
1919	5. Lethbridge	726,208	
	6. Medicine Hat	22,546	
	7. Brooks	16,612	
	8. Drumheller	919,751	
	9. Ardley	29,380	
	10. Pembina	142,079	
	11. Edmonton	573,242	
	12. Tofield	181,131	
			2,610,949
1920	5. Lethbridge	1,003,777	
	6. Medicine Hat	14,816	
	7. Brooks	24,029	
	8. Drumheller	1,355,316	
	9. Ardley	26,632	
	10. Pembina	176,561	
	11. Edmonton	632,438	
	12. Tofield	125,793	
	13. Peace River	72	
			3,359,434

LIGNITE MINES—*Continued*

Year	Division	Tons	
1921	5. Lethbridge	841,854	
	6. Medicine Hat	16,808	
	7. Brooks	25,729	
	8. Drumheller	1,147,529	
	9. Ardley	34,538	
	10. Pembina	163,565	
	11. Edmonton	593,823	
	12. Tofield	119,512	
			2,943,358
1922	5. Lethbridge	648,609	
	6. Medicine Hat	32,871	
	7. Brooks	27,669	
	8. Drumheller	1,356,373	
	9. Ardley	40,531	
	10. Pembina	153,241	
	11. Edmonton	664,428	
	12. Tofield	162,947	
			3,086,669
1923	5. Lethbridge	697,212	
	6. Medicine Hat	22,918	
	7. Brooks	28,102	
	8. Drumheller	1,421,821	
	9. Ardley	29,109	
	10. Pembina	168,139	
	11. Edmonton	616,247	
	12. Tofield	177,542	
	13. Peace River	651	
			3,161,741
1924	5. Lethbridge	511,560	
	6. Medicine Hat	50,203	
	7. Brooks	27,144	
	8. Drumheller	1,401,753	
	9. Ardley	31,011	
	10. Pembina	197,292	
	11. Edmonton	675,285	
	12. Tofield	201,456	
	13. Peace River	956	
			3,096,660
1925	5. Lethbridge	758,082	
	6. Medicine Hat	47,292	
	7. Brooks	21,420	
	8. Drumheller	1,337,161	
	9. Ardley	46,685	
	10. Pembina	184,872	
	11. Edmonton	548,303	
	12. Tofield	211,796	
	13. Peace River	748	
			3,156,359

CHAPTER IV.

OPERATING CONDITIONS AND PRACTICE

NATURAL CONDITIONS

1. Geological

In Chapter I. on Coal Resources, a short account was given of the general geology of the province and the fundamental characteristics of the coal seams. These are all-important as constituting the underlying conditions of mining operations.

2. Climatic

The influence of climate on mining operations must not be lost sight of. Several witnesses called attention to the difficulties in extremely cold weather in the operation of the mine cars and the railway cars in the yard and in the general conditions of all the outside work. This has some effect on costs and output, although it need not be serious if proper precautions are taken. See further account under causes of lessened output later in this chapter.

3. Means of Access

Of 68 mines reporting the means of access, the following was the position:

TABLE 19—*Showing for certain reporting mines the means of access.*

Division	Adit Level or Slope	Shaft	Stripping
1. Crowsnest	5	0	0
2. Canmore	1	0	0
3. Brazeau	3	0	0
4. Mountain Park	7	0	2
5. Lethbridge	4	4	0
6. Medicine Hat	2	0	0
7. Brooks	1	0	0
8. Drumheller	11	12	0
9. Ardley	2	0	0
10. Pembina	1	1	0
11. Edmonton	3	5	0
12. Tofield	1	1	2
	41	23	4

These mines produce the bulk of the output in the province. It will be seen that, without exception, the bituminous mines operate by adit levels or slopes and that all the shaft mines occur in the lignite field. The two stripping pits in Division 4 are subbituminous mines and there are two stripping pits reported in Division 12.

4. Roof Conditions

The roof conditions throughout the province may be summarized by divisions as follows:

Division 1—Crowsnest: Seams from flat to vertical mostly pitching 25 degrees to 50 degrees. Roof fairly good, for the most part consisting of hard sandstone, although, over a portion of the area worked, there is a shale parting known as cap rock between the top of the coal seam and the main roof. Roof requires timbering but an extra amount under cap rock.

Division 2—Canmore: Seams from flat to highly pitched. Good roof, mostly sandstone. Moderate amount of timber required.

Division 3—Brazeau: Seams pitching about 12 degrees from the horizontal. Bituminous mines—soft shale roof requiring systematic timbering, with sets placed close together. Sub-bituminous mines—soft clay shale roof requiring similar timbering.

Division 4—Mountain Park: Seams pitching from 20 degrees to 50 degrees. Bituminous mines—varying conditions but mostly coal or soft shale roof requiring the use of a lot of timber. Sub-bituminous mines—good roof.

District 5—Lethbridge: Flat seams. Shale roof requiring timber for support in both levels and rooms.

Division 8—Drumheller: Flat seams. Sandstone roof in upper seam; shale in lower seam; roof conditions fair and moderate amount of timber required.

Division 9—Ardley: Flat seams. Fairly good shale roof requiring timber for support.

Division 10—Pembina: Flat seams. Sandstone roof; timber required in most places for support.

Division 11—Edmonton: Flat seams. Clay shale roof but not difficult to support owing to shallow depth of coal seam. Timber required.

5. Floor Conditions

The floor conditions throughout the province may be summarized by divisions as follows:

Division 1—Crowsnest: Good hard floor throughout whole of this area.

Division 2—Canmore: Good floor conditions.

Division 3—Brazeau: Shale floor inclined to heave.

Division 4—Mountain Park: Good floor conditions throughout.

Division 5—Lethbridge: Shale floor, inclined to heave, forms mud in wet roadways.

Division 8—Drumheller: Soft shale (containing bentonite); heaves easily from roof weight and forms mud in wet places, making horse haulage difficult.

Division 9—Ardley: Soft shale floor same as No. 8.

Division 10—Pembina: Hard shale floor inclined to heave under heavy roof weight.

Division 11—Edmonton: Soft shale floor same as Division No. 8.

6. Gas Conditions

The gas conditions throughout the province may be summarized by divisions as follows:

Division 1—Crowsnest: Considerable inflammable gas (methane) given off in working the coal seam. Safety lamps required.

Division 2—Canmore: Similar to Division No. 1.

Division 3—Brazeau: Similar to Division No. 1.

Division 4—Mountain Park: Similar to Division No. 1 in bituminous mines. Very little gas in sub-bituminous mines.

Division 5—Lethbridge: Inflammable gas rarely found but safety lamps used underground.

Division 8—Drumheller: Very little gas found, some mines using open lights.

Division 9—Ardley: Generally speaking, no gas and open lights used.

Division 10—Pembina: Gas found occasionally; safety lamps not compulsory.

Division 11—Edmonton: Generally speaking, no gas and open lights used throughout district.

OPERATING CONDITIONS

7. Methods of Work

As the following tabulation will show, the system known as room and pillar is the one in general use throughout the whole province. This applies equally to the bituminous, sub-bituminous and lignite mines. The physical conditions met with in all the coal areas at present developed in the province do not lend themselves to working by the long wall system; although that method of mining has been tried out in several districts, particularly in the flat seams of the domestic coal areas. Where conditions might otherwise be suitable for working long wall, the short season is an objection, as it means interrupted working and more difficulty in keeping the face open with added expense for re-opening. Sixty-nine mines reporting gave the following:

TABLE 20—*Showing for certain reporting mines the method of working.*

	Room and Pillar	Longwall	Stripping
Division 1—Crowsnest	5	0	0
" 2—Canmore	1	0	0
" 3—Brazeau	3	0	0
" 4—Mountain Park	8	0	2
" 5—Lethbridge	8	0	0
" 6—Medicine Hat	2	0	0
" 7—Brooks	1	0	0
" 8—Drumheller	23	0	0
" 9—Ardley	2	0	0
" 10—Pembina	2	0	0
" 11—Edmonton	8	0	0
" 12—Tofield	2	0	2
	65	0	4

These are the mines producing the bulk of the tonnage in the province.

8. Ventilation

Quite numerous complaints as to bad ventilation have been made to the Commission. These come mostly from the lignite field where there is less danger of gas and, therefore, where the operators are, perhaps, not so particular. These complaints include that of insufficient air. The commonest complaint is that the air is poorly distributed owing to the absence of stoppings or to leaks, etc. Several witnesses believed that, while the required volume of air was going into the mine, it was not following its proper course. On the other hand, the operators pointed out that it was expensive to drive cross-cuts, which were for the sole purpose of bringing the ventilation to the face, so that it would be sheer folly to leave them unstopped. The chief complaint is the amount of smoke caused by shooting throughout the shift. If such shooting is necessary and is allowed, strong ventilation is required to counteract the effect of it. Many witnesses, however, stated that such promiscuous shooting was due, almost altogether, to inexperienced miners who did not arrange their work properly. One careful witness stated that, while he thought the provisions of the Mines Act were properly complied with as to furnishing a certain amount of air for each person and each horse, it was practically impossible to provide enough to drive away the smoke made by inexperienced miners. The responsibility for solving this problem must be undertaken by the management. Those working in rooms should shoot at quitting time. The men working in the entries must shoot when they are ready; but ventilation can be secured by carrying a brattice cloth right up to the face along the posts.

With all due allowance for the possible tendency to magnify such things, when giving evidence before a Commission, there seems no question that bad ventilation is a feature in some districts of the province. A number of witnesses gave specific cases of men having to stop work on this account, the lost time being placed as high as two hours in the day. Even then men claimed that they worked in the smoke and the gasses that were left after the smoke to the detriment of their health. There can be no question that good ventilation is as much an advantage to the operator as to the workman and would result in increased output.

Almost without exception, the evidence was that the provisions of the Mines Act in this regard are satisfactory enough so far as the broad general provisions were concerned. The cause for complaint, therefore, if any, must be in the way the Act is observed. This will be discussed later in Chapter VIII. dealing with legislation and the enforcement of it.

9. Mechanical Haulage

Of the mines reporting, the following is an analysis of the system of haulage in use:

TABLE 21—*Showing for certain reporting mines the system of mechanical haulage.*

Division	Main Rope	Main and Tail	Endless Rope	Air Loco.	Electric Loco.
1. Crowsnest	1	1	0	3	0
2. Canmore	0	1	0	0	0
3. Brazeau	0	2	0	0	1
4. Mountain Park	2	1	1	0	0
5. Lethbridge	1	0	2	0	0
6. Medicine Hat	0	1	0	0	0
7. Brooks (No mechanical haulage).					
8. Drumheller	4	2	1	0	0
9. Ardley	0	0	0	0	0
10. Pembina	0	1	0	0	1
11. Edmonton	0	1	0	0	1
12. Tofield	0	0	0	0	0
	8	10	4	3	3

10. Horse Haulage

With the exception of one witness, who referred to the bad condition of certain horses in a mine which has since closed down, no complaints reached the Commission on this score. It seems to be the general opinion that mine horses are treated as well as the circumstances of their work permit.

11. Coal-Cutting Machines

The following figures as to the use of coal-cutting machines are taken from the Mines Reports for the various years:

TABLE 22—*Coal-cutting machines in use in Alberta showing number of machines and tonnage and percentage of output produced by them.*

Year	Electric Machines No.	Electric Machines Tonnage	Electric Machines Output % of	Compressed Air Machines No.	Compressed Air Machines Tonnage	Compressed Air Machines Output % of	All Machines % of Output
1913	4	120,870	2.8	163	848,481	19.7	22.5
1914	8	152,853	4.	119	656,552	17.2	21.2
1915							
1916	8	200,597	4.3	160	889,129	19.1	23.4
1917	14	268,086	5.5	165	960,397	19.7	25.2
1918	24	541,380	8.8	193	1,328,466	21.6	30.4
1919	35	526,744	10.5	209	928,722	18.5	29.
1920	35	1,256,225	18.2	238	1,331,124	19.3	37.5
1921	62	838,981	14.1	212	997.092	16.8	30.9
1922	76	1,278,357	21.4	202	856,912	14.2	35.6
1923	76	1,501,513	21.9	168	811,371	11.8	33.7
1924	78	1,426,824	27.4	195	687,347	13.2	40.6

All the machines shown in the above table are for preparing coal by under-cutting, with the exception of 18 machines used in the Crowsnest Pass area for the year 1924. These latter are mechanical picks, used by the miner in the place of hand picks, the object being to eliminate blasting of coal, where coal dust and gas make blasting somewhat dangerous. The use of mechanical picks, operated by compressed air, is being extended in the Crowsnest area.

12. Mechanical Loaders

The Commission paid particular attention to the question of using mechanical loaders in Alberta mines. The increasing use of such loaders is one of the features of mining practice in the United States and elsewhere, the recent United States Coal Commission going so far as to conclude that, in the next decade, there will be a further reduction of 25% in the man power required to produce a ton of bituminous coal, through better mining, more extended use of machinery and particularly by replacing hand loading. Is it possible to anticipate a corresponding development in the mines of Alberta?

In the steam coal mines, with the pitch of the seams running from 25 degrees up to 90 degrees, the use of loading machines is practically impossible and, in most cases, is unnecessary; because the coal runs by gravity to the point of loading. In other cases, where the pitch is not so heavy, the timbering which has to be done close up to the face is an obstacle to the operation of such machines. To operate a mechanical loader, of the type in general use elsewhere, the seam must be more or less flat, preferably at least 6 feet thick and, generally speaking, such machines require 12 feet clearance to operate. With a bad roof requiring close timbering, such a machine could not be operated without changing timbers to an extent that would make its use uneconomical. The Commission found that the use of such machines had been carefully considered in the Drumheller field and the conclusion come to that they were not suitable. Not only were the seams too low and the roof for the most part too poor; but it was thought by the operators that the use of such a loader would tend to increase the breakage of the coal.

In the parts of the province where the seams might be suitable for some adaptation of the mechanical loader, the intermittent operation is a factor. To justify the investment in equipment and the adaptation of the practice at the particular mine is thought to require a steadier operation than is at present possible for the lignite mines. However, it is these very mines that are required to rush production at the peak of the demand and this would be secured by mechanical loaders and conveyors and other mechanical devices. There are loading machines of the conveyor belt type in successful operation in some mines in the province and the Commission thinks the use of such machines should be extended.

The Commission concludes, therefore, that the greater introduction of mechanical loaders into Alberta mines, perhaps with modifications in the present machinery, is a matter of vital importance to the industry. The U.S. Commission anticipates great results from the increasing use of mechanical loaders. The report of that Commission says that the cost of mining has proved by actual results to be reduced by as much as 30%, by using such machinery. The speed of loading is so great that the danger of falls of roof is reduced and there is better control of the operation; because it is concentrated in a smaller territory for the same output—about one-eighth of the area of a hand loading

mine. There is a saving in timber and from 5% to 10% greater extraction also due to the speed. The cost of drainage and ventilation is less by reason of a smaller active area. The cost of track equipment and maintenance is also less and safety is increased. That report concludes that "the loading machine is established to such a degree of efficient operation and magnitude of tonnage production as to insure its inevitable ultimate adoption in the coal industry."

13. Timber Consumption and Supply

The Mines Branch Reports give the following figures as to the consumption of timber in the mines of the province for the years indicated:

TABLE 23—*Mine timber used in province of Alberta according to reports of Mines Branch, omitting ties, slabs and lagging.*

Year	Round Timber Lineal Feet	Square Timber and Lumber Board Measure
BITUMINOUS MINES		
1916	3,933,348	
1917	4,977,863	620,342
1918	5,972,627	1,040,049
1919	4,784,354	929,589
1920	6,201,195	1,372,774
1921	5,834,062	545,920
1922	4,226,828	181,990
1923	7,431,357	571,643
1924	3,082,203	503,213
SUB-BITUMINOUS MINES		
1922	598,918	
1923	307,837	
1924	433,963	
LIGNITE MINES		
1916	6,339,922	
1917	7,025,505	2,027,050
1918	8,559,659	3,229,679
1919	7,312,265	1,979,796
1920	8,839,008	3,328
1921	9,215,345	1,283,299
1922	9,859,561	171,264
1923	9,439,712	1,696,906
1924	8,931,121	1,026,270
ALL MINES		
1916	10,273,270	
1917	12,003,368	2,647,392
1918	14,532,286	4,269,728
1919	12,096,619	2,909,385
1920	15,040,203	1,376,102
1921	15,049,407	1,829,219
1922	14,685,207	353,254
1923	17,178,906	2,268,549
1924	12,447,287	1,529,483
Total for all mines	123,306,553	17,183,112

Ties, slabs and lagging are omitted from this table, because they are not given in the earlier Mines Reports; but the total amount of timber used in these forms is considerable, especially in certain districts.

At the request of the Commission, a statement was prepared by the Mines Branch for the years 1923 and 1924, showing the timber used in mines producing over 2,000 tons per annum, with the number of feet of timber used per ton and indicating the source of supply whether Alberta or B.C. A summary of these statements by character of coal, divisions and coal areas is as follows:

TABLE 24—*Timber used and origin in mines producing over* 2,000 *tons per annum with output in tons and number of lineal feet of timber per ton.*

Year 1923

Division and Coal Area	Province obtained from		Output	No. of
	Alberta	B.C.	in	Lin. ft.
No. Name	Lin. ft.	Lin. ft.	Tons	Per Ton
BITUMINOUS MINES—				
1. CROWSNEST—				
K. 10 Crowsnest . . .	3,508,457	165,708	1,600,656	2.3
2. CANMORE—				
K. 7 Cascade	734,000		264,447	2.8
3. BRAZEAU—				
K. 4 Nordegg. . . .	2,367,247		493,378	4.7
4. MOUNTAIN PARK—				
K. 3 Mountain Park	1,337,909	112,779	634,474	2.3
K. 2 Brule	301,610	326,740	248,659	2.5
Total Bituminous Mines	8,249,223	605,227	3,241,614	2.7
SUB-BITUMINOUS MINES—				
1. CROWSNEST—				
B. 7 Pincher	6,050	600	6,383	1.1
3. BRAZEAU—				
B. 4 Saunders . . .	246,736		76,136	3.2
4. MOUNTAIN PARK—				
B. 3 Coalspur . . .	131,697		88,807	1.5
Total sub-bituminous mines	384,483	600	171,326	2.2
LIGNITE MINES—				
5. LETHBRIDGE—				
B. 9 Lethbridge . .		3,271,940	648,177	5.1
B.12 Taber		84,697	23,567	3.6
6. MEDICINE HAT—				
B. 13 Redcliff		55,350	20,761	2.7
7. BROOKS—				
E. 11 Gleichen . . .	16,000		2,055	7.8
B. 14 Brooks		34,000	5,731	6.
8. DRUMHELLER—				
E. 7 Big Valley . .	153,000		43,269	3.5
E. 8 Carbon	159,024		90,570	1.8
E. 9 Sheerness. . .	55,420		13,774	4.
E. 10 Drumheller . .	2,853,992		1,225,035	2.3

Division and Coal Area No. Name	Province obtained from Alberta Lin. ft.	B.C. Lin. ft.	Output in Tons	No. of Lin. ft. Per Ton
LIGNITE MINES—*Continued*				
9. ARDLEY—				
E. 5 Castor	11,796		6,230	1.9
10. PEMBINA—				
E. 1 Pembina	340,357	1,260	168,139	2.
11. EDMONTON—				
E. 2 Edmonton	2,085,853		591,939	3.5
12. TOFIELD—				
E. 4 Camrose	199,246		60,024	3.3
Total Lignite Mines	5,874,688	3,447,247	2,899,271	3.2
SUMMARY				
Bituminous mines	8,249,223	605,227	3,241,614	2.7
Sub-bituminous mines	384,483	600	171,326	2.2
Lignite mines	5,874,688	3,447,247	2,899,271	3.2
All mines	14,508,394	4,053,074	6,312,211	2.9
Year 1924				
BITUMINOUS MINES—				
1. CROWSNEST—				
K. 10 Crowsnest	1,826,687	129,556	912,579	2.1
2. CANMORE—				
K. 7 Cascade	430,000		134,827	3.1
3. BRAZEAU—				
K. 4 Nordegg	853,031		174,772	4.9
4. MOUNTAIN PARK—				
K. 3 Mountain Park	1,256,544	43,020	286,297	4.5
K. 2 Brule	27,924		6,547	4.2
Total bituminous mines	4,394,186	172,576	1,515,022	3.
SUB-BITUMINOUS MINES—				
1. CROWSNEST—				
B. 7 Pincher	4,780		3,580	1.3
3. BRAZEAU—				
B. 4 Saunders	312,686		68,546	4.6
4. MOUNTAIN PARK—				
B. 3 Coalspur	192,732		134,071	1.4
Total sub-bituminous mines	510,198		206,197	2.5
LIGNITE MINES—				
5. LETHBRIDGE—				
B. 9 Lethbridge		2,342,105	398,573	5.9
B. 12 Taber	38,647	193,461	86,022	2.7
6. MEDICINE HAT—				
B. 3 Redcliff		122,509	48,327	2.5
7. BROOKS—				
E. 11 Gleichen	11,700		2,951	3.9
B. 14 Brooks		38,500	4,092	9.4
8. DRUMHELLER—				
E. 7 Big Valley	121,600		50,730	2.4
E. 8 Carbon	303,842		171,946	1.8
E. 9 Sheerness	45,990		31,550	1.5
E. 10 Drumheller	2,707,518		1,107,417	2.4

Division and Coal Area No.	Name	Province obtained from Alberta Lin. ft.	B.C. Lin. ft.	Output in Tons	No. of Lin. ft. Per Ton
LIGNITE MINES—*Continued*					
9.	ARDLEY—				
	E. 5 Castor	14,915		7,418	2.
	E. 6 Ardley	20,000		6,713	3.
10.	PEMBINA—				
	E. 1 Pembina	470,160		196,913	4.
11.	EDMONTON—				
	E. 2 Edmonton	2,243,129		668,470	3.3
12.	TOFIELD—				
	E. 4 Camrose	196,507		87,956	2.2
Total lignite mines		6,174,008	2,696,575	2,869,078	3.1

SUMMARY

Bituminous mines	4,394,186	172,576	1,515,022	3.
Sub-bituminous mines	510,198		206,197	2.5
Lignite mines	6,174,008	2,696,575	2,869,078	3.1
Total all mines	11,078,392	2,869,151	4,590,297	3.

In the course of the hearings, the Commissioners examined the various witnesses as to the source of their timber supply and their general estimate of its quantity. One witness in the Crowsnest Pass stated that they had secured their timber from their own property; but that was nearly finished; and they were buying timber from the forest reserve. Where they were now cutting, they had another six or seven years' supply; but a mile or two further over on another creek there was quite a stand of timber that had not yet been cruised. Another witness had not looked particularly into the question of timber, except for the general knowledge that the supply would play out in a comparatively few years. The mines in the Brazeau were using timber from the forest reserve and the largest mine could only see 10 years' supply ahead without having to import by rail from outside districts. The mines in the Lethbridge field were already importing timber from B. C. and knew in a general way that their present source of supply was coming towards an end. As the supply got farther back from the railway, they expected to pay increased prices. The mines along the C. N. R. and on the Coal Branch are already importing special timber from B. C., although most of their supply is secured locally. The mines in the lignite field draw on the same sources and the Commission did not find that the operators there thought of the supply of mine timber as the limiting factor. In this, perhaps, they were not fully alive to the situation.

The Forestry Branch of the Department of the Interior at Ottawa was appealed to for an estimate of the timber resources of Alberta and the following was submitted by it, as probably the most reliable information available, without claiming great accuracy for it:

TABLE 25—*Timber Resources of Alberta as estimated by the Dominion Forestry Branch.*

	Saw Material		Pulp and Fuelwood		Total
			Ties, Posts, Poles, etc.		
		Equivalent in Standing Timber		Equivalent in Standing Timber	Equivalent in Standing Timber
Softwood—	M. B. Ft.	M. Cu. Ft.	Cords	M. Cu. Ft.	M. Cu. Ft.
Jack Pine . . .	2,500,000	547,500	80,000,000	9,360,000	9,907,500
Larch	100,000	21,900	2,000,000	234,000	255,900
Douglas Fir . .	400,000	87,600	200,000	23,400	111,000
Spruce	8,500,000	1,861,500	60,000,000	7,020,000	8,881,500
Balsam	200,000	43,800	2,600,000	304,200	348,000
Total	11,700,000	2,562,300	144,800,000	16,941,600	19,503,900
Hardwoods—					
White Birch . .	200,000	43,800	3,000,000	285,000	328,800
Aspen	5,000,000	1,095,000	100,000,000	9,500,000	10,595,000
Total	5,200,000	1,138,800	103,000,000	9,785,000	10,923,800
Grand Total .	16,900,000	3,701,100	247,800,000	26,726,600	30,427,700

In above table M=1,000.

Reconnaissance surveys and forest cover maps have been made for four divisions of the Rocky Mountains reserve. These surveys as the name implies are of a very superficial nature but the results are given as follows:

TABLE 26—*Showing for the divisions of the Rocky Mountains reserve the areas estimated in the Dominion Forestry Branch.*

Forestry Division—	Barren	Young Growth	Merchantable Timber
	Sq. Miles	Sq. Miles	Sq. Miles
Brazeau . . .	525	1100	620 @ 3100 M. ft.—1,922,000 M. ft.
Clearwater . .	935	3400	200 @ 3100 M. ft.— 620,000 M. ft.
Bow River . .	520	1400	520 @ 3100 M. ft.—1,612,000 M. ft.
Crowsnest . .	490	550	270 @ 11520 M. ft.—3,110,400 M. ft.
			7,264,400 M. Ft.

The great disturbing factor in all estimates as to the available timber supply is the danger of destruction by fire, which was referred to by several witnesses. One in particular would not venture an estimate as to how long the mine timber supply would last because every year there were fires which burnt up a large quantity. If they were free from fires, they had a great many years' mine timber supply close to the mine.

Reforestation: The witnesses who appeared before the Commission seemed to be of the opinion that very little was being done in the way of reforestation. One spoke of the planting of half an acre with seed as an experiment in germination but most of the other witnesses had not heard of any steps being taken in this direction, although they all agreed that it was time something was done. The Dominion District Forest Inspector

for Alberta furnished the Commission with the following brief report on the measures of reforestation now being undertaken in Alberta:

"I may say that our work for the most part has been almost purely experimental. The most important operation has been carried on on the Cooking Lake forest reserve about 28 miles east of Edmonton, where some 700 acres have been either planted or seeded to white spruce, lodgepole pine and Douglas fir. I might explain, in passing, that by 'planting' we mean standard nursery practice, where the trees are grown from two to four years in a nursery before being planted in their permanent location. Seeding, on the other hand, means the placing of the seed on prepared ground on the area desired to be restocked. The planting of spruce and Douglas fir has been uniformly successful on the Cooking Lake reserve. Pine has been badly damaged by rabbits, the last two years, but individuals, which have escaped, have shown remarkably fast growth—much faster and better than either of the other two species. The direct seeding, while not uniformly successful, has, in most cases, shown encouraging results and further experiments are to be carried on. It may be of interest to state that the costs per acre of seeding is less than half the planting costs. Other work has been done, both in the mountain areas and in the north; but it has been done more with the object of discovering the requirements of natural reproduction, rather than to discover methods of restocking by artificial means. It might be pointed out that the restocking of areas by natural means is always to be perferred to artificial means. There are certain denuded areas in the province, burned time and again by fires, which will not be restocked by natural means within any reasonable length of time. Such areas, fortunately, are comparatively rare and by far the larger part of burned over areas in this province are coming in again to either spruce or pine. This is particularly true of the regions in which, presumably, you are most interested, namely, the burned over areas in the Crowsnest Pass, the burned areas in the vicinity of the Alberta Coal Branch and the Brazeau subdivision of the C.N.R. and along the main line of the C.N.R. from Edson west. Artificial reforestation on a large scale is not necessary on any of the areas contiguous to the present day coal mining operations, because these areas are, for the most part, restocking in a perfectly satisfactory manner by natural means. Even if they were not doing so, it is extremely doubtful if any but the most accessible of such areas would repay the money spent in securing a stand by artificial means. when one takes into consideration the present and probable future demand and the prices at which timber supplies can be obtained from B.C. and other timbered areas."

Kind of Timber Used: The kinds of timber used are shown on the statements submitted by the Mines Branch as spruce, tamarac, jack pine, fir and poplar. For the most part the timber

used has been fire killed. Many operators, however, find that the local jack pine and spruce that occur at any considerable altitude are too short in the grain; and they are importing B. C. fir for timbers that have to stand considerable strain. This suitability of the timber must be taken into account as diminishing the apparent supply available.

Timber Testing: The Industrial and Research Council has undertaken, as one of its activities, the testing of local timbers which mines use. They first circulated a questionnaire to operators, as a result of which it appeared that no systematic study had yet been made to ascertain the best types of timber and the best preparation to meet the varying conditions met with in the coal mines of the province. Accordingly, experimental work has been undertaken. Somewhat similar tests were made by the Forest Products Laboratories of Canada and a report was issued in 1921, giving the results of 4 years' work. The material for these tests comprised white birch, yellow birch, balsam, fir, jack pine, black spruce and red spruce, all the material being secured from the province of Nova Scotia. The U.S. Forest Products Laboratory at Madison, Wisconsin, has conducted elaborate tests of a similar character. In summing up for this Commission the position as to investigating mine timbers, the Specialist of the Forest Products Laboratories of Canada states that service tests are difficult to obtain. Tests that were started in many instances failed, owing to crushing and breaking by movements in the mine or damage by other causes, before the life of the timber under normal conditions could be ascertained; but the letter adds: "There is adequate information to show that chemical treatment of timber to prevent decay is just as effective below ground as above and that the surface records of treated ties, posts, poles, etc., may be safely used in conjunction with records of mine timbers as a guide when estimating the economy of treated mine timbers. The U. S. Bureau of Mines has been trying for a number of years to induce mine owners in the U. S. to adopt preservative treatment. In parts of a mine, which will not be abandoned before untreated timber will decay, there is absolutely no question as to the economy of using zinc chloride, sodium fluoride or creosote preservatives. There will be an increase in efficiency by using creosote in wet localities; but, under average conditions, any one of the preservatives noted above will show a large annual saving over untreated timber. A mining company, that will clean up its storage yard, pile the reserve timbers so that air seasoning can take place without decay, standardize the size of sets used, do all cutting and framing before treatment and treat the timber in accordance with good practice, will be amply repaid for the time and trouble taken to organize the work.

"The services of the Forest Products Laboratories of Canada are available to any Company that desires information on the best species of available timber to use, kind of preservative and method of application whether brush, spray, dipping, open tank or pressure."

The Commission can only call attention to the problem of timber supply without offering any suggestions for its solution. A detailed and accurate study should be made as to the available supplies, the rate of natural increase, afforestation and the probable competition for the supply by other industries.

14. Personnel

Chapter VII. on Mine Workmen and Labor Relations will deal in some detail with the working force in Alberta coal mines. For the purposes of this chapter, an attempt is made to examine the output per employee. The figures, given by the Mines Branch Report, of tons per man employed are based on the figures for average number of employees on payroll and take no account of the number of shifts worked. As might be expected, therefore, the resulting figures show some startling results and they cannot be used for purposes of comparison. Mr. Stirling secured for the Commission for the year 1923 a statement of the production per shift of mines producing over 2,000 tons per annum. This table is made up by taking the production in tons, as reported to the Mines Branch, and the number of man-shifts worked, as reported to the Workmen's Compensation Board. Summarizing these statements by character of coal, divisions and coal areas gives the following result:

TABLE 27—*Production per employee per shift of mines producing over 2,000 tons per annum for the year 1923.*

Division and Coal Area No. Name	Production in Tons	No. of Shifts Reported to Work. Com. Board	Production per Employee per Shift in Tons
BITUMINOUS MINES			
1. CROWSNEST—			
K. 10 Crowsnest . .	1,600,656	478,812	3.34
2. CANMORE—			
K. 7 Cascade . . .	264,447	88,423	2.99
3. BRAZEAU—			
K. 4 Nordegg . . .	493,378	168,806	2.92
4. MOUNTAIN PARK—			
K. 2 Brule	248,659	137,225	1.81
K. 3 Mountain Park	634,474	196,930	3.22
Total bituminous mines..	3,241,614	1,070,196	3.03
SUB-BITUMINOUS MINES			
1. CROWSNEST—			
B. 7 Pincher . . .	6,383	1,312	4.86
3. BRAZEAU—			
B. 4 Saunders . . .	76,136	35,215	2.16
4. MOUNTAIN PARK—			
B. 3 Coalspur . . .	377,274	87,211	4.33
Total sub-bituminous mines	459,793	123,738	3.72

Division and Coal Area No. Name	Production in Tons	No. of Shifts Reported to Work. Com. Board	Production per Employee per Shift in Tons
	LIGNITE MINES		
5. LETHBRIDGE—			
B. 9 Lethbridge . .	648,177	299,840	2.16
B. 12 Taber	23,567	12,608	1.87
6. MEDICINE HAT—			
B. 13 Redcliff . . .	20,761	8,773	2.37
7. BROOKS—			
E. 11 Gleichen . . .	2,055	1,472	1.39
B. 14 Brooks	5,731	2,316	2.47
8. DRUMHELLER—			
E. 7 Big Valley . .	43,269	12,619	3.43
E. 8 Carbon . . .	90,570	31,167	2.94
E. 9 Sheerness. . .	13,774	3,770	3.65
E. 10 Drumheller . .	1,233,126	359,404	3.43
9. ARDLEY—			
E. 5 Castor	6,230	1,349	4.62
10. PEMBINA—			
E. 1 Pembina . . .	168,139	56,672	2.97
11. EDMONTON—			
E. 2 Edmonton . .	611,689	171,709	3.56
12. TOFIELD—			
E. 3 Tofield	104,105	19,312	5.39
E. 4 Camrose . . .	69,585	20,662	3.37
Total lignite mines . . .	3,040,778	1,001,673	3.04
	SUMMARY—TOTAL FOR PROVINCE		
Bituminous mines	3,241,614	1,070,196	3.03
Sub-bituminous mines. . .	459,793	123,738	3.72
Lignite mines	3,040,778	1,001,673	3.04
All mines	6,742,185	2,195,607	3.07

While statistics for this province are not available on as elaborate a scale or over as great a range of time, it will be interesting to append, for purposes of comparison, the following information from the Report of the U. S. Coal Commission:

"Taking into account all workers, skilled and unskilled, both inside and outside at all bituminous mines, the average daily output per man was—

1890	2.56 tons
1900	2.98 "
1910	3.46 "
1921	4.19 "

The gain was due to machinery and better engineering practice.

"In anthracite mining, owing to thinner and deeper beds, the opposite condition prevailed—

1905	2.18 tons per man per day
1921	2.09 " " " " " "

Better engineering was more than offset by increasing natural handicaps."

TABLE 28—*How productivity per man per day varies with size of mine in U. S. Net tons produced per man employed per day worked, at all commercial bituminous mines. From reports of operators to United States Geological Survey.*

Size Class	1905	1914	1920	1921
Mines producing yearly—				
0— 9,999 tons	1.96	2.29	2.36	2.70
10,000— 49,999 "	2.52	2.91	3.24	3.45
50,000— 99,999 "	2.90	3.35	3.80	3.98
100,000—199,999 "	3.34	3.78	4.10	4.26
200,000 and over "	3.80	4.18	4.50	4.73
Total—all mines	3.23	3.71	3.99	4.19

TABLE 29—*U. S. production per man per day by method of mining—1921. Total tons produced divided by number of men—days worked. Surface workers included.*

	Mined by Hand	Shot from Solid	Mined by Machine	Strip Pits	Not Classified	Total
Colorado	3.8	5.6	3.8	.....	2.8	3.8
Illinois	3.3	4.5	5.1	8.9	2.6	4.8
Montana	4.5	4.7	4.7	.....	2.2	4.6
North Dakota	5.1	3.8	3.8	8.6	3.9	4.2
West Virginia	4.3	3.6	4.9	12.5	2.8	4.8
Average in all U.S.	3.6	3.7	4.4	8.0	2.6	4.2

15. Short Time Operation

Much stress is properly laid on the irregularity of the operation of the Alberta coal mines. In an endeavor to ascertain the precise extent to which this condition prevails, the Commission in its General Questionnaire asked the operators to analyse the operation of their mines, for each of the four years 1921-24, inclusive, into the number of days operated at the various percentages of full capacity. In tabulating the results, the mines have been grouped and the individual mines designated by letters of the alphabet. The following is the result:

TABLE 30—*Number of days operated at various percentages of full capacity.*

Bituminous Mines

Divisions 1 to 4, inclusive, Crowsnest, Canmore, Brazeau and Mountain Park.

DAYS WORKED
1921

Percentages of full capacity—	Mine A.	Mine B.	Mine C.	Mine D.	Mine E.	Mine F.	Mine G.	Mine H.	Avge.
81% to 100%	161	77	25	.....	166	190	28	21	83
61% to 80%	85	48	148½	114	.....	.....	37	98	66
41% to 60%	58	68	65	116	4	.....	59	100	59
21% to 40%	.....	53	.....	11	.....	.....	51	15	16
1% to 20%	.....	14	.....	2	.....	.....	1	58	9
Mine idle	3	51	68½	61½	141	113	120	14	72
Total days	307	311	307	304½	311	303	296	306	305

Bituminous Mines—Divisions 1 to 4, inclusive, Crownest, Canmore, Brazeau and Mountain Park.

DAYS WORKED

1922

Percentages of full capacity—	Mine A.	Mine B.	Mine C.	Mine D.	Mine E.	Mine F.	Mine G.	Mine H.	Avge.
81% to 100% ..	103	97	.....	54	159	143	13	56	89
61% to 80% ..	47	146	.....	92	.....	.....	48	30	52
41% to 60% ..	15	.....	.....	12	.....	.....	39	54	17
21% to 40% ..	3	44	.....	2	.....	.....	28	7	12
1% to 20% ..	.....	.....	.....	.....	.....	.....	3	3	1
Mine idle	115	21	.....	143½	154	162	175	154	132
Total days	283	308	.....	303½	313	305	306	304	303

C. not available.

1923

81% to 100% ..	142	88	116	1	198	135½	37	108	103
61% to 80% ..	73	47	83½	87	.....	.....	152	53	62
41% to 60% ..	28	23	18	74	2	49	50	35	35
21% to 40% ..	12	57	13	54	.....	.....	17	11	21
1% to 20% ..	6	32	14	4	.....	.....	4	8	9
Mine idle	34	58	60½	89	110	118½	44	90	75
Total days	295	305	305	309	310	303	304	305	305

1924

81% to 100% ..	49	.....	.....	1	116	89	18	64	56
61% to 80% ..	11	.....	.....	45	.....	.....	73	15	24
41% to 60% ..	13	.....	.....	5	1	.....	18	17	9
21% to 40% ..	12	.....	.....	18	.....	.....	6	16	9
1% to 20% ..	1	.....	.....	3	.....	.....	2	2	1
Mine idle	216	.....	.....	233	197	196	192	192	204
Total days	302	.....	.....	305	314	285	309	306	303

B. and C. not available.

Lignite Mines

Divisions 5 and 6, Lethbridge and Medicine Hat

DAYS WORKED

1921

Percentages of full capacity—	Mine A.	Mine B.	Mine C.	Mine D.	Mine E.	Avge.
81% to 100%	.....	222½	.....	202	189	123
61% to 80%	.....	.....	74	7	6	17
41% to 60%	15	.....	116	1	2	27
21% to 40%	17	.....	7	.....	.....	5
1% to 20%	59	.....	2	.....	.....	12
Mine idle	219	90½	110	97	107	125
Total days	310	313	309	307	304	309

1922

81% to 100%	22	138	1	147	150	92
61% to 80%	26	.....	67	9	5	21
41% to 60%	44	.....	22	1	.....	13
21% to 40%	49	.....	34	.....	.....	17
1% to 20%	7	.....	9	.....	.....	3
Mine idle	162	174	181	148	150	163
Total days	310	312	314	305	305	309

Lignite Mines—Divisions 5 and 6, Lethbridge and Medicine Hat

DAYS WORKED

1923

Percentages of full capacity—	Mine A.	Mine B.	Mine C.	Mine D.	Mine E.	Avge.
81% to 100%	.....	145½	4	191	114	91
61% to 80%	.....	.....	83	2	2	17
41% to 60%	18	.....	92	.....	.....	22
21% to 40%	95	.....	3	.....	.....	20
1% to 20%	39	.....	.....	.....	.....	8
Mine idle	159	167½	131	112	189	152
Total days	311	313	313	305	305	310

1924

81% to 100%	.....	.....	50	103	.....	76
61% to 80%	.....	.....	44	3	.....	24
41% to 60%	.....	.....	6	1	.....	3
21% to 40%	.....	.....	9	.....	.....	5
1% to 20%	.....	.....	2	.....	.....	1
Mine idle	.....	.....	206	198	.....	202
Total days	.....	.....	317	305	.....	211

A., B. and E. not available.

Division 8, Drumheller

DAYS WORKED

1921

Percentages of full capacity—	Mine A.	Mine B.	Mine C.	Mine D.	Mine E.	Mine F.	Mine G.	Mine H.
81% to 100%	120	133	146	82	141	84	98	9
61% to 80%	.....	.....	.....	24	.....	18	15	29
41% to 60%	.....	.....	.....	.....	14	29	14	29
21% to 40%	.....	.....	.....	2	.....	11	21	54
1% to 20%	.....	.....	.....	.....	.....	2	.....	10
Mine idle	190	177	164	206	155	162	159	188
Total days	310	310	310	314	310	306	307	319

	Mine I.	Mine J.	Mine K.	Mine L.	Mine M.	Mine N.	Mine O.	Avge.
81% to 100%	67	46	.....	.....	.....	53	123	79
61% to 80%	.....	7	56	.....	102	37	.....	21
41% to 60%	.....	24	12	.....	20	30	.....	12
21% to 40%	.....	36	56	.....	.....	46	.....	16
1% to 20%	.....	96	14	.....	.....	2	.....	9
Mine idle	233	104	174	.....	189	140	187	173
Total days	300	313	312	.....	311	308	310	310

Mine L. not available.

1922

Percentages of full capacity—	Mine A.	Mine B.	Mine C.	Mine D.	Mine E.	Mine F.	Mine G.	Mine H.
81% to 100%	139	118	142	73	136	94	79	42
61% to 80%	.....	.....	.....	47	.....	20	35	35
41% to 60%	.....	.....	.....	14	.....	20	21	16
21% to 40%	.....	.....	.....	.....	.....	3	2	11
1% to 20%	.....	.....	.....	.....	.....	5	15	9
Mine idle	171	192	168	178	174	168	153	202
Total days	310	310	310	312	310	310	305	315

Lignite Mines—Division 8, Drumheller

DAYS WORKED

1922—(*Continued*).

Percentages of full capacity—	Mine I.	Mine J.	Mine K.	Mine L.	Mine M.	Mine N.	Mine O.	Avge.
81% to 100%	123	47	69	.....	.....	91	104	90
61% to 80%	.....	3	40	.....	116	39	.....	24
41% to 60%	.....	71	24	.....	.....	9	.....	13
21% to 40%	.....	.....	27	.....	.....	4	.....	3
1% to 20%	.....	50	19	.....	.....	.....	.....	7
Mine idle	187	138	126	.....	190	167	206	173
Total days	310	309	305	.....	306	310	310	310

Mine L. not available.

1923

Percentages of full capacity—	Mine A.	Mine B.	Mine C.	Mine D.	Mine E.	Mine F.	Mine G.	Mine H.
81% to 100%	113	147	.....	54	206	35	60	3
61% to 80%	.....	.....	167	52	.....	33	36	36
41% to 60%	.....	.....	.....	51	.....	48	.....	46
21% to 40%	.....	.....	.....	27	.....	47	24	35
1% to 20%	.....	.....	1	1	.....	30	32	52
Mine idle	197	163	110	133	104	110	154	140
Total days	310	310	278	318	310	303	306	312

	Mine I.	Mine J.	Mine K.	Mine L.	Mine M.	Mine N.	Mine O.	Avge.
81% to 100%	71	26	39	21	47	90	136	70
61% to 80%	.....	52	80	45	88	20	.....	41
41% to 60%	.....	16	23	24	71	16	.....	20
21% to 40%	.....	.....	.....	34	.....	3	.....	11
1% to 20%	.....	99	46	74	.....	.....	.....	22
Mine idle	239	118	116	106	105	186	174	144
Total days	310	311	304	304	311	315	310	308

1924

Percentages of full capacity—	Mine A.	Mine B.	Mine C.	Mine D.	Mine E.	Mine F.	Mine G.	Mine H.
81% to 100%	87	82	104	.....	83	65	.....	78
61% to 80%	.....	.....	.....	.....	.....	14	.....	17
41% to 60%	.....	.....	.....	.....	.....	19	.....	25
21% to 40%	.....	.....	.....	.....	.....	4	.....	22
1% to 20%	.....	.....	.....	.....	.....	1	.....	12
Mine idle	223	228	206	.....	227	207	.....	156
Total days	310	310	310	.....	310	310	.....	310

Mines D. and G. not available.

	Mine I.	Mine J.	Mine K.	Mine L.	Mine M.	Mine N.	Mine O.	Avge.
81% to 100%	95	.....	130	34	.....	62	84	82
61% to 80%	.....	.....	89	32	.....	26	.....	16
41% to 60%	.....	.....	.....	16	.....	4	.....	6
21% to 40%	.....	.....	27	7	.....	8	.....	6
1% to 20%	.....	.....	.....	14	.....	.....	.....	2
Mine idle	215	.....	70	203	.....	212	226	198
Total days	310	.....	316	306	.....	312	310	310

Mines J. and M. not available.

Lignite Mines

Divisions 10, 11, 12, Pembina, Edmonton and Tofield.

DAYS WORKED

Percentages of full capacity—	Mine A.	Mine B.	Mine C.	Mine D.	Mine E.	Mine F.	Mine G.	Mine H.	Avge.
1921									
81% to 100% ..	35	.....	38	239	96	91	199	.....	100
61% to 80% ..	12	.....	56	.....	67	67	.....	71	39
41% to 60% ..	43	.....	51	.....	60	95	.....	164	59
21% to 40% ..	64	.....	55	.....	.....	.....	.....	10	18
1% to 20% ..	34	.....	23	.....	.....	.....	.....	.....	8
Mine idle	125	.....	87	56	86	58	105	69	84
Total days	313	.....	310	295	309	311	304	314	308
Mine B. not available.									
1922									
81% to 100% ..	60	6	77	232	217	95	248	.....	117
61% to 80% ..	37	7	33	.....	.....	79	.....	37	24
41% to 60% ..	34	34	29	.....	.....	25	.....	96	27
21% to 40% ..	27	130	45	.....	.....	13	.....	81	37
1% to 20% ..	51	66	23	.....	.....	8	.....	9	20
Mine idle	96	66	106	69	92	88	56	92	83
Total days	305	309	313	301	309	308	304	315	308
1923									
81% to 100% ..	45	.....	30	244	221	49	277	.....	108
61% to 80% ..	17	.....	33	.....	.....	116	.....	32	25
41% to 60% ..	64	12	50	.....	.....	74	.....	167	46
21% to 40% ..	58	60	55	.....	.....	.....	.....	14	23
1% to 20% ..	45	94	11	.....	.....	.....	.....	1	69
Mine idle	83	153	133	62	88	64	21	100	88
Total days	312	319	412	306	309	303	298	314	309
1924									
81% to 100% ..	76	4	.....	220	200	124	279½	1	129
61% to 80% ..	27	7	.....	.....	.....	56	.....	57	21
41% to 60% ..	44	4	.....	.....	.....	10	.....	149	29
21% to 40% ..	.....	68	.....	.....	.....	.....	.....	8	11
1% to 20% ..	122	120	.....	.....	.....	.....	.....	1	35
Mine idle	43	116	.....	89	109	119	28	97	86
Total days	312	319	.....	309	309	309	307½	313	311
Mine C. not available.									

In the column headed "Average" are given the number of days, resulting from adding the days worked by every mine at that particular capacity and dividing by the number of mines. A properly weighted average would take into account the respective capacity of the various mines. Obviously, the effect on the industry of an excessive number of idle days depends on whether the mine be a large or a small one; but the rough average struck will serve to compare one year with another and to demonstrate the extent of short time and short capacity operation in the respective fields.

Taking general averages, irrespective of the mine capacity, gives for the above mines (which together in 1923 produced 69% of the total output) the following result:

TABLE 31—*Average number of days worked at various percentages of full capacity by the mines the individual record of which is given in Table 30.*

Percentages of full capacity—	DAYS WORKED 1921	1922	1923	1924	4 Years' Average
81% to 100%	91	96	89	88	91
61% to 80%	35	30	39	20	31
41% to 60%	35	17	29	13	23
21% to 40%	15	15	17	8	14
1% to 20%	9	8	16	11	11
Mine idle	123	142	117	169	138
Total days	308	308	307	309	308

The general practice in mines in other places is to work fairly well up to capacity or stand idle. Where figures are given in such places of the number of days worked in a year, this means all days not idle. The corresponding figure of days worked is given in the Reports of the Mines Branch of this province. However, owing to the way in which the mines here are compelled to operate at varying percentages of capacity, the figures of days not idle fails to tell the full story either from the point of view of the operation of the mine or the employment of the workmen. With this general caution, it will be interesting to compare the record as to operation in the United States and elsewhere. The report of the U. S. Coal Commission states that in twenty years the soft coal mines have worked an average of 220 days or about 72% of full time. It says that no progress has been made in overcoming irregularity of operation; and the great expansion of the market has simply meant irregular operation for more mines and irregular employment for more miners. The results in the principal coal mining countries of the world for the years 1901-18 are given in the following table:

TABLE 32—*Comparison of the average days worked per year at coal mines of principal countries, 1901-18, inclusive.*

United States—	1901	1902	1903	1904	1905	1906	1907
Anthracite	196	116	206	200	215	195	220
Bituminous	225	230	225	202	211	213	234
Great Britain	266	271	265	264	262	274	287
Prussia	293	288	299	294	286	306	307
France	290	265	294	286	284	267	284
Belgium	295	294	302	301	289	299	300

United States—	1908	1909	1910	1911	1912	1913	1914
Anthracite	200	.....	229	246	231	257	245
Bituminous	193	.....	217	211	223	232	195
Great Britain	271	267	273	273	285	290	272
Prussia	299	290	292	295	316	320	308
France	280	292	285	283	289	284	.....
Belgium	300	302	304	298	293	298	263

United States—	1915	1916	1917	1918
Anthracite	230	253	285	293
Bituminous	203	230	243	249
Great Britain	290	295	285	284
Prussia	338	339	332	321
France				
Belgium	243	281	299	288

For the reason explained above, no corresponding figures can be arrived at for the province of Alberta for the purpose of comparison with these. In addition to studying short time operation by days, figures have also been compiled, for a number of typical mines, of the monthly outputs as percentages of their estimated capacity. The results can best be studied in the form of the diagram (Plate III.). This diagram shows, for each mine, the monthly outputs, as percentages of the estimated capacity of the mine, for each of the four years 1921-24, following which, are put circles divided by different hatchings into idle time and operations at various percentages of capacity. These circles, therefore, represent in graphic form the tables already given by days. This chart shows at a glance the almost grotesque irregularity of the operation of many of the Alberta mines and the appalling prevalence of idle time.

16. Causes of Lessened Output

Table 16, in Chapter III., shows the estimated daily capacity of the present mines in Alberta, divided according to character of coal and grouped in coal divisions. Table 18, in the same chapter, shows the output of these mines similarly arranged. The aggregate results show the following comparison: the estimated yearly capacity of the bituminous mines, on the basis of 300 days' operation, is 6,366,000 tons; the maximum production of bitumnious mines in any one year was in 1923—3,241,614 tons. Similarly, the estimated yearly capacity of the sub-bituminous mines is 1,203,000 tons; the maximum production from these mines was in the year 1922—635,073 tons. The sub-bituminous mines were not shown separately prior to that year. The estimated yearly capacity of the lignite mines is 7,194,000 tons; against which the highest output yet reached was in 1920 with 3,359,434 tons. It was highly important to inquire into the causes of the discrepancy between these figures; and, as one means to that end, the operators were asked for their opinion. The General Questionnaire called for a statement of the estimated maximum daily capacity and what would have been produced in 300 working days at that rate, contrasted with which were the figures for actual production. The operator was then asked to give his opinion of the extent, in percentages, to which this lessening of annual output could properly be attributed to certain prime causes. Attention was particularly called to the need of care in this matter of fixing the prime cause and, as an illustration, the operator was warned not to attribute loss of output to labor disputes at a season when the mines would ordinarily be idle for lack of market. In most cases, the operators appear to have understood the question and gave it a careful answer. The replies are merely an expression of opinion and not the result of records kept for the precise purpose. They do not admit of exact tabulation; but the following brief account under the respective causes will be of interest.

Lack of Orders: The failure to reach capacity is ascribed to lack of orders to the following extent:

Bituminous mines—Year 1921, 64 per cent to 97 per cent; year 1922, 12 per cent to 78 per cent; year 1923, 60 per cent to 96 per cent; year 1924, 9.61 per cent to 78 per cent.

Sub-bituminous mines—Year 1921, 0 per cent to 100 per cent; 1922, 57 per cent to 97.4 per cent; 1923, 40 per cent to 99 per cent; 1924, 33 per cent to 77.4 per cent.

Lignite mines—Year 1921, 60 per cent to 100 per cent; 1922, 13.6 per cent to 100 per cent; 1923, 45 per cent to 100 per cent; 1924, 14 per cent to 100 per cent.

The above gives the extreme range of the replies under this heading and indicates that lack of business was the main cause of loss of output, for the bituminous and sub-bituminous mines in the years 1921 and 1923 and for the lignite mines in all four years. The replies, examined in detail, however, show that this problem of marketing presses very unequally on individual mines, as the very wide range in percentages would indicate. Some allowance must, of course, be made for lack of consistency in sizing up the situation but, even so, there are evidently great variations in marketing ability, whatever be the cause of it.

Lack of Railway Cars: All classes of mines, examined for each of the four years in question, show this as almost a negligible cause of lessened output. In many cases, the reply was "Nil" throughout. Where any percentage was given under this heading, it was 1 per cent or 2 per cent, with a few running as high as 3 per cent and only a very few small mines reaching anything higher than this. As a general statement, therefore, it would be true to say, based on these replies, that shortage of railroad cars is not a feature of the Alberta coal industry; which is in marked contrast to the conditions in the United States, where this has been found to be one of the chief limiting factors especially at certain times.

Lack of Labor: This is to be distinguished from labor disputes which come later. In all four years, no bituminous mine reported lack of labor. One or two sub-bituminous mines mentioned this as a cause of lessened output and, in each year, there are a few lignite mines which put it down as responsible up to 4 per cent or 5 per cent, with an odd small mine running even more. On the whole, however, lack of labor was for the four years examined a completely negligible factor.

Climatic Conditions: The replies under this heading may be summed up as follows: for all mines, except the stripping pits, in the year 1921, 0 to 3 per cent.; in the year 1922, 0 to 4½ per cent; in the year 1923, 0 to 10 per cent; in the year 1924, 0 to 5 per cent. High percentage loss from this cause was given by a number of mines for the year 1923, some very big producers ascribing to it the maximum of 10 per cent. For the three years 1922-3-4, the stripping pits put down to climatic difficulties 10 per cent of their loss of output.

Accidents to Employees: This is evidently quite an individual and irregularly occurring cause. For the most part, the reply was "Nil"; but several mines in each year showed from ½ per cent to 3 per cent or 4 per cent, a few mines going as high as 6 per cent. In addition, then, to all the stronger incentives to the prevention of accidents, there is added the consideration that the result is appreciable loss of output.

Mine Disability: Most mines ascribe no part of their lessened output to this cause, possibly due to pride. In the case of other mines, it appears as quite a constant factor as 1 per cent to 4 per cent. Exceptional cases too gave special reconstruction of plant as the cause of loss, in a particular year, running up as high as 80 per cent.

Absenteeism: Nearly every mine shows some loss under this heading and in quite considerable percentages, particularly in the years 1921 and 1923. Taking only the larger mines, such figures are given as 10 per cent, 12 per cent, and even higher. For the majority, however, the range could be given as from 1 per cent to 5 per cent of the loss of output.

Labor Disputes: It was in connection with this heading that the mines were asked to use particular caution in ascribing the loss of output to the direct prime cause; and, for the most part, according to the replies, they appear to have observed this caution. Naturally, the strike years of 1922 and 1924 show very big percentages in the bituminous mines, for 1922 ranging from 22.8 per cent to 89.7 per cent, and, in 1924, from 19 per cent to 89 per cent. The sub-bituminous mines show very small losses under this heading in 1922. In 1923, there are replies of 19 per cent and 20 per cent and in 1924 from 13.8 per cent to 65 per cent. The lignite mines in the strike years also show very heavy losses under this heading, in both cases ranging up to over 80 per cent; but, in keeping with the fact that the strike occurred only in union mines, many of the lignite fields show throughout very small losses under this heading.

Labor Turnover: For the most part, no reply was made to this question, trifling percentages being given in a few cases of the larger mines. A few small mines appear to have experienced difficulty and give 4 per cent or 5 per cent loss from this cause. The result under this heading might be presumed from the fact that there has been no lack of labor in the industry; so that the turnover in the working force is accomplished without appreciable effect on the output.

Other Causes: Space was provided for specifying other causes of lessened output, with an explanation of each. "Holidays" were given by a number of mines; but there was some uncertainty as to whether they meant statutory holidays or were dealing with what other mines had put under "Absenteeism." One mine mentioned "failure of hydro-electric power." "Funerals" were mentioned in one or two cases.

The above, then, were the results of the attempt to ascertain, with some degree of definiteness, the relative importance

of the various causes of lessened output. Each is discussed at greater length in the appropriate section of this Report, such as "lack of orders" under the various markets and labor problems in the chapter on labor relations within the industry. Viewed from the other side, output less than capacity becomes over-development and a general discussion of that important subject will be found in Chapter IX.

17. General Mining Practice

The impression left on the Commission through the hearings and otherwise is that the various operators in the province are alive to the advantages of using labor-saving devices and would be only too willing to employ them, if they had the means or if in their opinion they had the conditions that would make their application successful. The tables already given as to the use of coal-cutting machines, for example, show on the whole a continuous increase in the percentage of the output of the province that is machine cut. Incidentally, the electric machines are apparently replacing the compressed air machines for this purpose. In expressing its conviction that much remains to be done in this direction, the Commission is not minimizing what has been accomplished to date or the efforts of the pioneers in the industry.

An attempt was made to ascertain the attitude of the mine workmen in the province towards the introduction of labor-saving devices, but with rather conflicting results. On the one hand, replies such as the following were received: "Can be overdone"; "Labor-saving devices up to the present have only led to the present state of unemployment, lowered the standard of living of workmen and forced them into greater destitution." On the other hand, there were officials of unions who recognized that machinery and labor-saving devices were inevitable and desirable and that it was foolish to oppose them. The reply of one local was: "The most scientific appliances should be used to ensure cheaper production." Another local viewed the matter from a slightly different angle, in saying: "We believe that as many labor-saving devices as possible should be used to help to cut down the hours of labor." The Commission believes that the latter replies represent the view of the majority of the mine workmen in the province; although it is undoubtedly true that, in the past at least, the opposition of labor has been a handicap to the introduction of new machines. Where the use of them is not opposed, there is often a struggle as to the appropriate rate of pay for the machine runners.

18. Comparison With Operating Conditions and Practice in Competing Fields

The Commission has been made aware of the existence of a certain amount of general criticism of operating methods in this province, as compared with other places, and a tendency to think that coal here costs more than coals mined, for example in the

United States, which come into competition, because of failure to apply proper mining methods. The Commission could only have reached an independent judgment in respect of such a matter by an examination of both fields. The only alternative, and it is obviously not an entirely satisfactory substitute, was to take evidence and conduct general inquiries on this point.

As a result of this inquiry, the Commission is satisfied that speaking generally, the mines in the United States enjoy much better physical conditions. In the chapter dealing with geology of the Alberta coals, it has been pointed out that, in the first place, Cretaceous coals are less regular in occurrence. In the mines in the foothills, natural conditions are difficult; the seams are pitching or greatly faulted and a lot of rock work must be done on that account. In the United States, there are many mines working flat seams, with good roofs, adapted to machine mining to an extent that is not the case here. One witness of long experience stated most emphatically that the reason coal was mined and sold cheaper in the U.S. than over here was largely and almost entirely on account of their better physical conditions. He instanced one particular mine in the U.S., with which he was connected for about ten years; they had a thick seam, a good roof requiring very little or no timber, no gas, very little water. The mine required no particular maintenance and, if they had an idle day, they could almost lock the door and let the mine stand until they were ready to go back to work again. The more regular operation is also undoubtedly a factor. If a mine is working 300 days in the year, it pays to make capital expenditures to reduce the cost of operation, to an extent that would not be possible, if consideration must be given to the overhead on idle machinery.

Whether or not the general average is as high, the Commission is inclined to believe that, having regard to the difficult circumstances, there are mines in this country that are operating at least as efficiently as those elsewhere. Witnesses with experience in both places, when asked to carry the comparison further, thought that the superintendents, foremen and mine workmen would likewise stand comparison with those of other countries. The very fact of the greater difficulties tended to make this essential to continued operation.

In this connection, however, the Commission does not hesitate to quote at some length from the result of the investigation by the U.S. Coal Commission. As already mentioned, for their engineering and management studies that Commission employed its own corps of engineers for more than a year. If mining practice here is, on the average, no worse than in the U.S. it is probably no better; and the criticism of the American Commission may, therefore, be equally applicable here, and thus point out one direction in which improvement can in time be made. The United States Commission concluded that the bituminous coal mining industry in the United States was behind other industries in the introduction of machinery to reduce hand labor; although 75 per cent of the cost of coal is labor and more than half of this is for cutting and loading into cars. They found that there were great

losses through lack of system in haulage. In one study, they found that the loaders lost, on an average, 1 hour and 50 minutes a day, or 23 per cent of their time in waiting for cars. They found no standardized practice as to supervision underground and, in view of the great interdependence of the work of all classes, that friction and trouble resulted from inefficient management. They found unnecessary losses in tipple operation and that the work of the mine foremen was too detailed and excessive. In this respect, they thought that the solution would not be in a larger number of foremen but, on the analogy of many other large industries, that there should be a division of responsibility, with experts for various operations.

19. Suggestions for Improvement

That the operators of the province themselves recognize the need for progress and are working towards that end is well shown by the replies to the questionnaires that deal with suggestions for improvement in operating conditions and by the evidence given at the hearings. Many pointed out that there was room for the application of machinery to a greater extent than exists today. In many cases, the failure to carry this out has been due to lack of capital. A concentration of operations, facilitating the production and distribution of cheap power, will help the industry. Several of the operators themselves called attention to the need of greater application of technical knowledge. From this branch of its inquiry, then, the Commission concludes that there is great scope for further improvement in the coal mining industry of Alberta, by the increased use of labor-saving devices, especially adapted to meet conditions here, and by increasing efficiency in the management of the mines.

CHAPTER V.

CAPITALIZATION AND PROFITS AND LOSSES

1. Chairman's Questionnaire

By the Order in Council appointing it (see Appendix No. 1), this Commission was directed to inquire into the capitalization and the costs, income and profits and losses of operators. Authority was conferred upon the chairman to investigate personally these matters and "to receive information, respecting such matters from operators and members of their staffs in confidence and directing that such information, where so given in confidence, should not be made public nor divulged to the other Commissioners, as pertaining to any individual operator but merely as information pertaining to the industry." The authority thus conferred on the chairman was to be exercised "whenever the Commissioners may deem it necessary." One of the early acts of this Commission was to direct the chairman to conduct this inquiry into capitalization and profits and losses and a special "Chairman's Questionnaire to Mine Operators" was drawn up for the purpose.

The Chairman's Questionnaire (Appendix III., not printed) called for information as to the authorized capital stock, the issued capital stock, the amounts invested in the property, the way in which the property had been acquired both coal and surface rights, dividends paid, an itemized statement of the Profit and Loss Accounts for each of the four years 1921, 1922, 1923 and 1924 and Summary Balance sheets for each of those years, with a space for remarks on the general financial history and position of the company. Owing to the disturbances in the industry and the abnormal conditions during the Great War and immediately following it, the Commission decided that the four years mentioned would form the most useful basis for investigation. They include two "strike years" and two "non-strike years."

The Chairman's Questionnaire to operators was sent out with a circular letter which read in part as follows:

> "The attached copy of our Commission will furnish an explanation of the 'Chairman's Questionnaire' and will indicate the manner in which the information thus obtained will be handled. You will agree that the state of the coal industry, like any other industry, is not an abstract thing but is made up of the aggregate of the individual operations. If our report on the coal industry is to be of any real service to those engaged in the industry, to the Government and to the public at large, it must be founded on an accurate knowledge of the facts. I believe the plan adopted will commend itself to you. Under the authority of the Order in

Council and with the concurrence of my fellow Commissioners, I, as Chairman of the Commission, am to collect the information called for by the Chairman's Questionnaire and then, suppressing the identity of the individual operator, am to present the facts to my fellow Commissioners. This is precisely similar to the procedure that was adopted in the case of another recent Commission and concurred in by the private interests concerned."

This questionnaire was sent out only to those mines which, for the year 1923, had produced two thousand tons or more. In all, ninety-four sets were sent and replies more or less complete were received from sixty-three mines. A number were definitely excused after explaining the reasons why the information was not available. The remainder simply failed to furnish the information in spite of a number of reminders. This failure to respond, however, occurred almost exclusively in the smaller mines of the province and while the response by numbers was only two-thirds complete, the return on a tonnage basis is larger, especially for certain classes of coal. As elsewhere in this report, the exact extent of the reporting base will be indicated in connection with each item of information.

The method adopted for securing financial information has come in for a certain amount of criticism. One or two witnesses mentioned the point at the hearings and urged that the operators' books should be made available for their inspection. The explanation made at the public hearings may be repeated here. The object was to get the information so as to examine the industry and report to the Government on it. To make public information as to the precise financial condition of an individual Company and the profit or loss it was making would have given an unfair advantage to one mine against the other in the market; and any attempts to do so would have been resisted by the operators. There are many precedents for the course adopted. The recent Dominion Government Grain Commission followed a very similar procedure. The various grain companies presented their financial statements in confidence to one of the Commissioners, who abstracted from them all the information he desired and reported the results without names to his fellow Commissioners. In the case of the Sankey Coal Commission in England, the Act of Parliament constituting the inquiry, while giving the Commission powers to compel evidence, also provided that they might exclude the public "during the hearing of evidence on matters which but for this Act would not be disclosed" and provided severe penalties for anyone who divulged such information. The report of that Commission sets out the costs, profits and losses on investment, etc., as facts pertaining to the industry, giving a complete account of the industry; but in such a way that any competitor of the particular operator could not be enlightened thereby. It is interesting, too, to note that the Industrial Arbitration Act of New South Wales calls on the Members of a Board, appointed under the Act, to take an oath not to disclose any matter relating to the profits or losses

or the receipts and outgoings of any employer, the books of an employer or witness produced before the Board or the financial position of any employer or of any witness. In another section, this Act provides that no person shall be required, without his consent, to produce his books or give evidence as to his profits and losses or his financial position, unless he raises the objection that the profits are not sufficient for the purpose in question. If he raises such objection, he may be required to produce his books; but they are to be examined only by the chairman or an accountant appointed by the Board, under a similar oath respecting the confidential nature of the information, the only report to be made to the Board being a categorical "Yes" or "No" as to whether or not the examination of the books supports the objection.

An explanation will now be made of the general way in which the information thus collected has been summarized and compiled for the purposes of this report.

2. Capitalization

Companies engaged in the coal industry in Alberta show many variations in their form of capitalization. From the point of view of a comparative study, it is obviously a matter of indifference whether all the money required has been provided by an issue of common stock or, also, in part, by preference stock, by bonds, by loans from banks or individuals, by re-investing surpluses or by purchasing property on terms, so that part of the cost shows as an outstanding liability, etc., etc. "Nominal" capital as used throughout this chapter includes these various ways of providing for the fixed investment of the Company. In a number of instances, however, there was, even at a first glance, a considerable discrepancy between the nominal capital and the actual investment in the enterprise. Such cases arose mainly in the reconstruction of a Company, a round amount of stock being issued for the assets of the old concern. Where it was possible to ascertain the exact amount of cash that had been invested in the property in a permanent way, that figure, after making allowance for what had already been written off against operation, has been taken as the "adjusted" capital. For the purposes of the present inquiry, accumulated losses of the past, where recognizable as such, have been excluded as has also the portion of the capital, which represents excessive book valuations of coal rights. On the other hand, there are a number of companies in the province with quite small capital, operating under a lease of a developed property. In such cases, a substantial addition had to be made to arrive at a figure of adjusted capital invested in the enterprise, in order to make it at all comparable with other companies. The whole object in this adjustment was to arrive at a figure that might fairly be used as the basis for an interest charge, as one of the items of the cost of producing coal. The aggregate figures given for adjusted capital represent the total of the amounts arrived at for this special purpose. Neither the amount fixed for the individual mine nor

the aggregate of such amounts is to be regarded as an attempt to place a market value on the property or the cost of reproduction under present day conditions. It was advisable, merely for the particular purposes of this inquiry, to level down what might be termed over-capitalization and to level up what might be termed under-capitalization, so that a flat rate of return on capital could be considered.

In fixing these figures for adjusted capital, the chairman has used the information at his disposal, endeavoring to be conservative in doing so. A surer method would have been to have a valuation made of each property; but this would have involved the Government in unwarranted expense. If, in the result, some figures are too high and some too low, the average may come near the mark and it is the aggregate results that are here presented. The important thing was to have some basis to use for the purpose of incorporating in the accounts a return on the capital invested. Like the rate of that return to be discussed later, the aim has been to fix the amount of adjusted capital at so moderate a figure that no one could criticise it as being excessive.

The totals of adjusted capital for the reporting mines, which together for the four years, 1921 to 1924 inclusive, produced seventy-six per cent of the merchantable tonnage of the province, are as follows:

TABLE 33—*"Adjusted" capital of certain mines showing percentage of output from these mines for the four years* 1921-1924 *inclusive* (*see text for explanation*).

Class of Coal—	Adjusted Capital	Percentage of Output of Class 1921-1924
Bituminous	$16,450,000	95%
Sub-bituminous	1,330,000	70% (of 1922-4)
Lignite	4,775,000	60%
Total	$22,555,000	76%

It is not possible to show the relation of this to the total nominal capital or book value as reported, because the latter information is lacking in important cases. For example, there are a few instances in the province where coal mining is subsidiary to or combined with other businesses and the capital employed is not shown separately. As an illustration, however, the nominal capital of bituminous mines as listed totals $20,517,976.26 against the above figure of $16,450,000.00 for adjusted capital. To repeat the explanation once more, this latter figure has been calculated only for the purpose of an interest charge against the cost of coal made in the way explained later in this chapter.

3. Cost Statements

It was, perhaps, to be expected from the low tonnage per annum, fixed as a minimum, that many of the operators, replying to the Questionnaire, should present statements which would not have passed an auditor. By correspondence and further in-

quiry, these matters were straightened out as far as possible; but, short of an actual audit on the spot, it proved impracticable, in some cases, to get the figures in such shape that they could be used in the compilations. For the most part, these were returns of very small mines and, when they had to be discarded, the effect on the aggregate was not great. It is surprising, though, to find that a number of operators in the province in a fair way of business seem to keep very little more than a cash account and to know very little of their actual profit and loss showing as the year progresses. Aside from these there were variations in the division of the expense account, which made it very difficult for many to give the figures in the form called for by the questionnaire. That form was divided into Underground Costs and Surface Costs, showing, separately, "labor" and "material and supplies" the former item again being divided into "mine officials" and "other employees." The other headings making up the coal production costs were Power Purchased, Cost of Own Coal Used in Colliery, Administration Office and Selling Expense, Rentals, Royalty to Dominion Government, Royalty to Owner other than Dominion Government, Alberta Government Coal Tax, Other Taxes, Workmen's Compensation, Interest, Insurance, Reserves for Contingencies, Other Reserves if any, Depreciation, Amortization of Development, Depletion, Miscellaneous and Interest on Adjusted Capital. This latter item will be discussed in full later. On the revenue side, the statement called for the Value f.o.b. the mine of Merchantable or Disposable Coal Produced, the Value of Coal used at Colliery to offset the similar item occuring on the cost side and Other Revenue. Total revenue against total cost gave the gross profit or gross loss which, less Government Income Tax, if any, became the net profit or the net loss. Aside from accounts being kept under a different sub-division than the above, there are great variations in what is included in these various items. These variations must be kept in mind in considering the resulting figures. For example, one mine may conduct its own selling campaign and the cost of this will therefore appear as part of the total cost. Another mine may dispose of its product at a net price to a distributing agency, in which case both the cost and the revenue will be correspondingly reduced. Many mines keep no separate track of coal they burn in their own boilers and were, therefore, unable to fill in that item, both cost and revenue being equally reduced by its omission. It is, perhaps, in the matter of the reserves that there is the greatest divergence. There is much to be said for the providing of depreciation and other necessary allowances only when there is a realized profit, out of which such reserves can be set up, but, from the point of view of an aggregate statement of the industry, it was necessary to make the statements as far as possible uniform in such respects. In what follows, depreciation has been taken into account whether or not it appeared in the statements as submitted by the operators. The item of interest, too, required adjustment, the general principle adopted being to include, as interest on adjusted capital, interest on all that was involved in the permanent investment, whatever form it might happen to take,

leaving as the plain interest item only such amounts as bank interest on advances to carry the trade accounts.

An item for interest on adjusted capital has been inserted throughout all the statements submitted by the operators. This was necessary to make them uniform and, in the opinion of the chairman, was essential to presenting a true account of the industry. Where a Company has financed its permanent investment partly or wholly by bonds or other similar securities, the interest on such securities naturally appears in the cost statements. To conform with this, some such item must be inserted in the case of the Company that has financed itself wholly by the sale of common stock. The problem was to fix on a rate to be used for the purpose. The ready test of the average return on capital that should be provided by any industry is such a return as will attract fresh capital to that industry for its further development. Several witnesses were asked for their opinion as to what percentage return on capital invested in Alberta coal mines would be necessary to produce the desired result, namely an inflow of fresh money when needed. The replies, while recognizing the impossibility of fixing a uniform rate in such varying circumstances as would be presented here, ventured on a figure ranging from 15% to 20% per annum. In view of the fact that it is used to replace bond interest, interest on mortgages and other loans used for permanent purposes and in order to have the criticism all one way, the figure for present purposes has been fixed at 8%. Many will contend that this is much too low; none can say that it is too high. Who would face the risks of a mining enterprise for 8% on his money, while good farm mortgages yield a similar return? In all that follows, therefore, interest at 8% on the adjusted capital has been included as an item of the cost; and the profits and losses, both in the aggregate amount and per ton, are after taking into account this item as part of the cost. The first impression is often the lasting one and it seemed to the chairman much wiser to adopt this course, so that the result was presented after an allowance for interest as described, rather than to say that the profit was a larger figure from which must be deducted interest. Those who wish to get at a figure independent of this interest charge can easily do so, by adding to the profit or deducting from the loss 8% of the figure given for adjusted capital.

When the chairman undertook to compile this information personally, it was under a miscalculation as to the completeness and accuracy with which the returns would be made. The amount of correspondence and adjustment of statements that has been required to produce the result here given is a main cause of the length of time occupied in the presenting of this report. The signed statements by the operators have, in many cases, been accompanied by their auditors' reports and, with very trifling exceptions, there seems no reason to question the complete accuracy of the returns. There was difficulty, as already explained, in getting them uniform so as to fit the scheme drawn up by the Commission and to permit of tabulation with returns from

other mines. For better results along this line, it would have been necessary to employ a staff of accountants to visit the mines and compile the information afresh from original sources. In the result and with the limitations that will be noted in each case as to the tonnage output involved, the chairman believes that this chapter gives a reasonably complete and accurate account of the financial results of the coal industry in Alberta for the years in question.

4. Aggregate Profits and Losses—All Mines

Considering first the aggregate result for the four years 1921 to 1924 inclusive, the mines whose profit and loss statements have been examined show a net profit of $153,048.84. These mines produced 17,285,793 tons of merchantable coal, being 76% of the total merchantable tonnage of the province for those four years. The profit, therefore, was a little less than one cent per ton on the average.

This approximation to an even balance between profit and loss was by no means uniform for all the mines and for each of the four years. Putting in one group all the operations, which in any one of the four years showed a profit, and in the other group the operations, which in any one of the four years showed a loss, gives the following:

TABLE 34—*All reporting mines aggregate profit and loss for the years* 1921 *to* 1924 *inclusive according to results by individual mines and individual years. The mines included in this table produced seventy-six per cent of the total merchantable coal.*

	Tons of Merchantable Coal	Average Profit or Loss Per Ton		Profit or Loss
Aggregate of Profitable Operations	9,802,565	Profit about 42c	Profit	$4,078,252.11
Aggregate of Unprofitable Operations	7,483,228	Loss about 53c	Loss	$3,925,203.27
All operations	17,285,793	Profit .885 of a cent		$ 153,048.84

Analyzing this net aggregate profit, according to the results by mines for the whole four years, that is, putting in one group all the mines, which, on the results of the four years' operation, show a net aggregate profit and in the other group the mines, which, similarly, show a net aggregate loss gives the following:

TABLE 35—*All reporting mines' aggregate profit and loss for the years* 1921 *to* 1924 *inclusive according to results by individual mines for the whole four years' operations. The mines included in this table produced seventy-six per cent of the total merchantable coal.*

	Number of Mines	Tons of Merchantable Coal	Average Profit or Loss Per Ton	Profit or Loss
Mines showing profit...	21	9,809,833	Profit about 26c	Profit $2,572,995.28
Mines showing loss....	25	7,475,960	Loss about 32c	Loss $2,419,946.44
All mines	46	17,285,793	Profit .885c	Profit $ 153,048.84

So much for the aggregate results in all reporting mines of the province for the entire four year period. The results year by year will now be examined. For the year 1921, 4,111,238 tons (about seventy-five per cent of the total merchantable output) were produced at a net profit of $979,295.95 or about twenty-four cents a ton. In the year 1922, 4,289,294 tons (about seventy-six per cent of the total merchantable tonnage) were produced at a loss of $21,990.62 or about one half of a cent a ton. In the year 1923, 5,500,397 tons (about eighty-four per cent of the total merchantable tonnage) were produced at a profit of $565,045.98 or about ten cents a ton. In the year 1924, 3,384,864 tons (about sixty-nine per cent of the total merchantable tonnage) were produced at a loss of $1,369,302.47 or about forty cents a ton. The aggregate result for the four years was, as before, the production of 17,285,793 tons (being about seventy-six per cent of the total) at a net aggregate profit of $153,048.84 or a little less than one cent a ton.

These net results for each year are a combination of profits on the one hand and losses on the other. Two tables are given, one showing the mines making profits and the other the mines making losses, the net result having been given in the preceding paragraph:

TABLE 36—*Showing by years for all reporting mines in the province the aggregate profits of those mines making a profit in that year.*

Year	Number of Mines	Tons Produced at a Profit	Average Profit Per Ton	Profit
1921	20	3,147,468	About 47c	$1,490,451.46
1922	18	1,796,470	" 46c	819,032.21
1923	21	3,766,894	" 37c	1,395,685.06
1924	14	1,091,733	" 34c	373,083.38
All four years		9,802,565	About 42c	$4,078,252.11

TABLE 37—*Showing by years for all reporting mines in the province the aggregate losses of those mines making a loss in that year.*

Year	Number of Mines	Tons Produced at a Loss	Average Loss Per Ton	Loss
1921	14	963,770	About 53c	$ 511,155.51
1922	22	2,492,824	" 34c	841,022.83
1923	20	1,733,503	" 48c	830,639.08
1924	27	2,293,131	" 76c	1,742,385.85
All four years		7,483,228	About 53c	$3,925,203.27

For an analysis of these general results, the mines have been grouped into five classes:

Bituminous mines,

Sub-bituminous mines,

Lignite mines, Class A., being the mines in Divisions 5, 6 and 7, Lethbridge, Medicine Hat and Brooks,

Lignite mines, Class B., being the mines in Divisions 8 and 9, Drumheller and Ardley,

Lignite mines, Class C., being the mines in Divisions 10, 11 and 12, Pembina, Edmonton and Tofield.

5. Profits and Losses in Bituminous Mines

The bituminous mines, whose returns have been compiled, produced in the four years, 1921 to 1924 inclusive, ninety-five per cent of the merchantable bituminous coal of the province. These mines produced 9,063,162 tons at an average aggregate loss of about one-quarter of a cent per ton, the net aggregate loss being $21,575.95. As with the total results for the province this approximation to an even balance on the operations really represents heavy losses on the one side and almost corresponding profits on the other. Putting in one group the operations, which in any one year showed a profit, and in the other group the operations, which in any one year showed a loss, gives the following:

TABLE 38—*Reporting bituminous mines' aggregate profit and loss for the years* 1921 *to* 1924, *inclusive, according to results by individual mines and individual years. The mines included in this table produced ninety-five per cent of the merchantable bituminous coal.*

	Tons of Merchantable Coal	Profit or Loss Per Ton		Profit or Loss
Aggregate of Profitable Operations ...	5,432,354	Profit about 42c	Profit	$2,308,334.25
Aggregate of Unprofitable Operations .	3,630,808	Loss about 64c	Loss	$2,329,910.20
All operations	9,063,162	Loss .248c	Loss	$ 21,575.95

Again analyzing this net aggregate loss according to the results by mines for the whole four years, that is, putting in one group all the mines, which, on the results of the four years' operation, show a net aggregate profit, and, in the other group, the mines, which similarly show a net aggregate loss, gives the following result:

TABLE 39—*Reporting bituminous mines' aggregate profit and loss for the four years* 1921 *to* 1924, *inclusive, according to results by individual mines for the whole four years' operations. The mines included in this table produced ninety-five per cent of the merchantable bituminous coal.*

	Number of Mines	Tons of Merchantable Coal	Profit or Loss Per Ton		Profit or Loss
Mines showing profit	5	6,141,450	Profit about 20c	Profit	$1,237,027.45
Mines showing loss	5	2,921,712	Loss about 43c	Loss	$1,258,603.40
All mines	10	9,063,162	Loss .248c	Loss	$ 21,575.95

So much for the aggregate results in the reporting bituminous mines of the province for the entire four year period. The results year by year will now be examined. These can only be given as an aggregate for all reporting mines; because to do otherwise would be a violation of the pledge of confidence under which the information has been assembled. For the year

1921, 2,313,496 tons of merchantable coal (about eighty-three per cent of the total bituminous merchantable coal) were produced at a net profit of $657,102.65 or a profit of about 28c. a ton. In the year 1922, 2,162,139 tons (practically the entire bituminous coal) were produced by the reporting mines at a net loss of $290,845.06 or about 13c. a ton. In the year 1923, 3,226,036 tons (practically the entire bituminous coal) netted the reporting companies an aggregate profit of $753,925.41 or about 23c. a ton. For the year 1924, 1,361,491 tons (about ninety-three per cent of the bituminous coal) involved the reporting companies in an aggregate loss of $1,141,758.95 or about 84c. a ton. The aggregate result for the four years was, as before, the production of 9,063,162 tons, being ninety-five per cent of the total, at a net aggregate loss of $21,575.95 or about one quarter of a cent a ton.

These net results for each year are, once more, a combination of profits on the one hand and losses on the other hand. These can be given but not the tonnage. To give the latter would be, in certain cases, to disclose the identity of the reporting mine or mines; because a single tonnage figure or a group of two or three might easily be recognized. The following table shows the results of those mines with a profit as against those mines with a loss, with the corresponding net results:

TABLE 40—*Showing by years for the reporting bituminous mines the aggregate profits of those mines making a profit and the aggregate losses of the other mines, with the net result.*

Year	Total Profits	Total Losses	Net Profit or Loss
1921	$942,747.69	$285,645.04	Profit $657,102.65
1922	255,418.35	546,263.41	Loss 290,845.06
1923	1,050,658.91	296,733.50	Profit 753,925.41
1924	59,509.30	1,201,268.25	Loss 1,141,758.95
All four years	$2,308,334.25	$2,329,910.20	Loss $21,575.95

6. Profits and Losses in Sub-bituminous Mines

The sub-bituminous mines, whose returns have been compiled, produced in the three years 1922-24, inclusive, about seventy per cent of the merchantable sub-bituminous coal of the province. The four years cannot be compared; because sub-bituminous coal was not shown separately in the Report of the Mines Branch until 1922. These mines produced, in the four years 1921-24, inclusive, 1,296,002 tons at an average aggregate profit of about 18c. a ton making the net aggregate profit for the four years $229,702.69. As with the bituminous mines and the total results for the province, this profit was not uniformly distributed and represented larger profits on the one side and losses on the other. Putting in one group the operations, which in any one year showed a profit, and in the other group the operations, which in any one year showed a loss, gives the following:

TABLE 41—*Reporting sub-bituminous mines. Aggregate profit and loss for the years* 1921 *to* 1924, *inclusive, according to results by individual mines and individual years. The mines included in this table produced about seventy per cent of the merchantable sub-bituminous coal.*

	Tons of Merchantable Coal	Profit or Loss Per Ton	Profit or Loss
Aggregate of Profitable Operations ...	793,300	Profit about 59c	Profit $468,400.89
Aggregate of Unprofitable Operations .	502,702	Loss about 47c	Loss $238,698.20
All operations	1,296,002	Profit about 18c	Profit $229,702.69

This result cannot be further analyzed into the results for the four year period for individual mines without disclosing confidential information. The results for the sub-bituminous mines year by year will now be examined. For the year 1921, 203,526 tons of merchantable coal (the relation this tonnage bears to the total merchantable sub-bituminous tonnage that year cannot be stated; because sub-bituminous coal was not reported separately until the following year) were produced at a profit of $151,253.35 or a profit of about 74c. a ton. In the year 1922, 348,078 tons of merchantable coal (about fifty-seven per cent of such coal that year) were produced by the reporting mines at a net profit of $234,150.07 or about 67c. profit a ton. In the year 1923, 337,859 tons of merchantable coal (about eighty-three per cent of such coal that year) were produced by the reporting mines at a net loss of $110,050.98 or a loss of about 33c. a ton. In the year 1924, 406,539 tons of merchantable coal (being about seventy-six per cent of such coal that year) were produced by the reporting mines at a net loss of $45,649.75 or a net loss of 11c. a ton. The aggregate results of the whole four years were, as before, the production of 1,296,002 tons at a net aggregate profit of $229,702.69 or about 18c. a ton profit. Based on the three years 1922-24, for which sub-bituminous coal has been shown separately, the tonnage produced by the reporting mines was about seventy per cent of the total.

The net results for each year are, once more, a combination of profits on the one hand and losses on the other. The following table shows the results of those mines with a profit as against those mines with a loss, in each year, with the corresponding net result:

TABLE 42—*Showing by years for the reporting sub-bituminous mines the aggregate profits of those mines making a profit and the aggregate losses of the other mines with the net result.*

Year	Total Profits	Total Losses	Net Profit or Loss
1921.....	$151,253.35	Nil	Profit $151,253.35
1922.....	275,779.66	$41,629.59	" 234,150.07
1923.....	15,359.68	125,410.66	Loss 110,050.98
1924.....	26,008.20	71,657.95	" 45,649.75
All four years.....	$468,400.89	$238,698.20	Profit $229,702.69

7a. Profits and Losses in Lignite Mines

Group A—Divisions 5, 6 and 7, Lethbridge, Medicine Hat and Brooks

The lignite mines of this group, whose returns have been compiled, produced in the four years, 1921 to 1924, inclusive, seventy-nine per cent of the merchantable lignite coal of their group. These mines produced 2,060,025 tons at an aggregate loss of $530,307.77 or about 26c. a ton. As before, this heavy loss is the resultant of even heavier losses on the one side and profits on the other. Putting in one group the operations, which in any one year showed a profit, and in the other group the operations, which in any one year showed a loss, gives the following:

Table 43—*Reporting lignite mines of Group A. (Lethbridge, Medicine Hat and Brooks divisions). Aggregate profit and loss for the years* 1921 *to* 1924, *inclusive, according to results for individual mines and individual years. The mines included in this table produced seventy-nine per cent of the merchantable lignite coal of their group.*

	Tons of Merchantable Coal	Profit or Loss Per Ton	Profit or Loss
Aggregate of Profitable Operations ...	781,565	Profit about 29c	Profit $229,007.26
Aggregate of Unprofitable Operations .	1,278,460	Loss about 59c	Loss $759,315.03
All operations	2,060,025	Loss about 26c	Loss $530,307.77

This net result cannot be analyzed by mines without disclosing the results in individual cases. An examination by years shows the following: For the year 1921, 659,243 tons of merchantable lignite coal (about eighty-four per cent of such coal that year in those divisions) were produced by the reporting mines at a net profit of $86,990.72 or about 13c. a ton. In the year 1922, 500,030 tons (about seventy-eight per cent of the total) were produced by the reporting mines of Group A. at a net loss of $133,825.75 or about 27c. a ton. In the year 1923, 567,410 tons of merchantable lignite coal (about eighty-five per cent of the total) were produced by the reporting mines of Group A. at a net loss of $178,837.23 or about 32c. a ton. In 1924, 333,342 tons of merchantable lignite coal (about sixty-four per cent of the total) were produced by the reporting mines of Group A. at a net loss of $304,635.51 or about 91c. a ton. The aggregate result was, as stated, the production of 2,060,025 tons of merchantable lignite coal (being about seventy-nine per cent of the total of such coal produced in the four years in those divisions) at a net aggregate loss of $530,307.77 or about 26c. a ton.

These net results for each year were a combination of profits on the one hand and losses on the other, which can be given but without the tonnage; because the latter would, in certain cases, disclose the identity of the reporting mines. The following table shows the results of those mines with a profit as against those mines with a loss, with the corresponding net results:

TABLE 44—*Showing by years for the reporting lignite mines of Group A. (Lethbridge, Medicine Hat and Brooks Divisions), the aggregate profits of those mines making a profit and the aggregate losses of other mines with the net result.*

Year	Total Profits	Total Losses	Net Profit or Loss	
1921	$191,952.52	$104,961.80	Profit	$86,990.72
1922	1,715.01	135,540.76	Loss	133,825.75
1923	31,303.32	210,140.55	"	178,837.23
1924	4,036.41	308,671.92	"	304,635.51
All four years	$229,007.26	$759,315.03	Loss	$530,307.77

7b. Profits and Losses in Lignite Mines

GROUP B.—DIVISIONS 8 AND 9, DRUMHELLER AND ARDLEY

The lignite mines of this group, whose returns have been compiled, produced in the four years, 1921 to 1924, inclusive, sixty-three per cent of the merchantable lignite coal of their group. These mines produced 3,309,831 tons at an aggregate profit of $451,172.56 or about 14c. profit a ton. Once more this profit is the resultant of greater profits on certain operations and losses on others. Putting in one group the operations, which in any one year showed a profit, and in the other group the operations, which in any one year showed a loss, gives the following:

TABLE 45—*Reporting lignite mines of Group B. (Drumheller and Ardley Divisions). Aggregate profit and loss for the years* 1921 *to* 1924, *inclusive, according to results by individual mines and individual years. The mines included in this table produced sixty-three per cent of the merchantable lignite coal of their group.*

Aggregate of	Tons of Merchantable Coal	Profit or Loss Per Ton	Profit or Loss	
Profitable Operations	1,992,928	Profit about 45c	Profit	$889,836.27
Aggregate of Unprofitable Operations	1,316,903	Loss about 33c	Loss	438,663.71
All operations	3,309,831	Profit about 14c	Profit	$451,172.56

Analyzing this net aggregate profit according to the results by mines for the whole four years, that is putting in one group all the mines, which on the results of the four years' operation show a net aggregate profit, and in the other group, the mines which similarly show a net aggregate loss, gives the following result:

TABLE 46—*Reporting lignite mines Group B. (Drumheller and Ardley Divisions). Aggregate profit and loss for the four years* 1921 *to* 1924, *inclusive, according to results by individual mines for the whole four years' operations. The mines included in this table produced about sixty-three per cent of the merchantable lignite coal of their group.*

Mines showing	Number of Mines	Tons of Merchantable Coal	Profit or Loss Per Ton	Profit or Loss	
profit	9	2,135,480	Profit about 38c	Profit	$816,998.39
Mines showing loss	6	1,174,351	Loss about 31c	Loss	$365,825.83
All mines	15	3,309,831	Profit about 14c	Profit	$451,172.56

So much for the aggregate result of the entire four year period in the case of the lignite mines of Group B. Examined year by year the following is the result. In the year 1921, 614,408 tons of merchantable lignite coal (about fifty-five per cent of such coal produced that year in those divisions) were produced by the reporting mines of Group B. at a net profit of $22,599.00 or about 4c. a ton. In the year 1922, 922,629 tons of merchantable lignite coal (about sixty-nine per cent of the total) were produced by the reporting mines at a net profit of $174,766.85 or about 19c. a ton. In the year 1923, 1,013,303 tons of merchantable coal (about seventy-three per cent of the total were produced by the reporting companies at an aggregate profit of $123,372.60 or 12c. a ton. In the year 1924, 759,491 tons (or about fifty-five per cent of the total) were produced by the reporting mines at a profit of $130,434.11 or 17c. a ton. As before, the aggregate result was the production of 3,309,831 tons of merchantable lignite coal (being sixty-three per cent of the merchantable lignite coal produced by that group) at a net aggregate profit of $451,172.56 or about 14c. profit a ton.

These net results for each year are, as before, a combination of profits on the one hand and losses on the other. In this group, the tonnage figures can be given and the number of mines; because there is a sufficient number of mines in each category to conceal the identity of any individual operation. It will be more convenient in this case to give two tables, one showing the mines making profits and the other the mines making losses, the net result having been given in the preceding paragraph.

TABLE 47—*Showing by years for the reporting lignite mines in Group B. (Drumheller and Ardley Divisions). The aggregate profits of those mines making a profit in that year.*

Year	Number of Mines	Tons Produced at a Profit	Average Profit Per Ton	Profit
1921	6	342,015	About 40c	$136,244.79
1922	8	570,937	" 47c	266,851.45
1923	8	612,797	" 44c	268,448.97
1924	7	467,179	" 47c	218,291.06
All four years		1,992,928	About 45c	$889,836.27

TABLE 48—*Showing by years for the reporting lignite mines in Group B. (Drumheller and Ardley Divisions), the aggregate losses of those mines making a loss in each year.*

Year	Number of Mines	Tons Produced at a Loss	Average Loss Per Ton	Net Loss
1921	6	272,393	About 42c	$113,645.79
1922	6	351,692	" 26c	92,084.60
1923	6	400,506	" 36c	145,076.37
1924	6	292,312	" 30c	87,856.95
All four years		1,316,903	About 33c	$438,663.71

While, as shown by the last table, there were six mines in each year that operated at a loss these were not the same mines throughout. The returns from some of these mines were not available in every year; other mines were not operating in all the years; so, while fifteen contributed to the general four year results, only the returns of the numbers shown above were available.

7c. Profits and Losses in Lignite Mines

GROUP C.—DIVISIONS 10, 11 AND 12, PEMBINA, EDMONTON AND TOFIELD

The lignite mines of this group, whose returns have been compiled, produced in the four years, 1921 to 1924, inclusive, forty-two per cent of the merchantable lignite coal of their group. This is the lowest percentage reporting and is due, in part, to several large mines which had closed down completely and from which returns could not be obtained. Many of the returns in this district were either missing or had to be discarded because the figures could not be made to agree. While the percentage reporting is comparatively small, there is no reason to doubt that it is fairly representative. These mines produced 1,556,773 tons at an aggregate profit of $24,057.31 or about 1½c. a ton. Once more, this profit is the resultant of larger profits on certain operations and of losses on others. Putting in one group the operations, which in any one year showed a profit, and in the other group the operations, which in any one year showed a loss, gives the following:

TABLE 49—*Reporting lignite mines in group C. (Pembina, Edmonton and Tofield Divisions). Aggregate profit and loss for the years* 1921-1914, *inclusive, according to results by individual years. The mines included in this table produced forty-two per cent of the merchantable lignite coal of their group.*

	Tons of Merchantable Coal	Profit or Loss Per Ton		Profit or Loss
Aggregate of Profitable Operations	802,418	Profit about 23c	Profit	$182,673.44
Aggregate of Unprofitable Operations ..	754,355	Loss about 21c	Loss	158,616.13
All operations	1,556,773	Profit about 1½c	Profit	$24,057.31

Analyzing this net aggregate profit, according to the results by mines for the four years, that is putting in one group all the mines, which on the results of the four years' operation show a net aggregate profit, and in the other group the mines, which similarly show a net aggregate loss, gives the following result:

TABLE 50—*Reporting lignite mines Group C. (Pembina, Edmonton and Tofield). Aggregate profit and loss for the four years* 1921-1924, *inclusive, according to results by individual mines for the whole four years' operations, the mines included in this table produced about forty-two per cent of the merchantable lignite coal of their group.*

	Number of Mines	Tons of Merchantable Coal	Profit or Loss Per Ton		Profit or Loss
Mines showing profit	4	625,400	Profit about 17c	Profit	$109,348.24
Mines showing loss	4	931,373	Loss about 9c	Loss	85,290.93
All mines	8	1,556,773	Profit about 1½c	Profit	$24,057.31

Examined year by year, the following is the result: In the year 1921, 320,565 tons of merchantable lignite coal (about forty per cent of such coal produced that year in those divisions) were produced by the reporting mines of Group C. at a net profit of $61,350.23 or about 19c. a ton. In the year 1922, 356,418 tons of merchantable lignite coal (about thirty-nine per cent of the total) were produced by the reporting mines at a loss of $6,236.33 or less than 2c. a ton. In the year 1923, 355,789 tons (about thirty-nine per cent of the total) were produced by the reporting mines at a loss of $23,363.82 or about 7c. a ton. In the year 1924, 524,001 tons (about fifty-two per cent of the total) were produced by the reporting mines at a loss of $7,692.37 or about 1½c. a ton. As before, the aggregate result was the production of 1,556,773 tons at a profit of $24,057.31 or about 1½c. a ton.

These net results for each year are, likewise, a combination of profits on the one hand and losses on the other. In this group, the tonnage figures can be given and the number of mines; because there is no risk of revealing any individual operation by doing so. Two tables will be given, one showing the mines making profits and the other the mines making losses:

TABLE 51—*Showing by years for the reporting lignite mines in Group C. (Pembina, Edmonton and Tofield Divisions), the aggregate profits of those mines making a profit in that year.*

Year	Number of Mines	Tons Produced at a Profit	Average Profit Per Ton	Profit
1921	4	267,759	About 25c	$68,253.11
1922	4	225,272	" 9c	19,267.74
1923	3	161,026	" 19c	29,914.18
1924	3	148,361	" 44c	65,238.41
All four years		802,418	About 23c	$182,673.44

TABLE 52—*Showing by years for the reporting lignite mines in Group C. (Pembina, Edmonton and Tofield Divisions), the aggregate losses of those mines making a loss in that year.*

Year	Number of Mines	Tons Produced at a Loss	Average Loss Per Ton	Net Loss
1921	2	52,806	About 13c	$6,902.88
1922	2	131,146	" 19c	25,504.47
1923	3	194,763	" 27c	53,278.00
1924	4	375,640	" 19c	72,930.78
All four years		754,355	About 21c	$158,616.13

The mines showing a loss or profit in any year are by no means identical with the mines making a similar showing in other years.

7d. Profits and Losses in all Lignite Mines

The foregoing information as to the profits and losses in the three separate groups of lignite mines will now be presented as a combined showing for all such mines in the province. The lignite mines, whose returns have been compiled, produced in the

four years, 1921 to 1924, inclusive, sixty per cent of the merchantable lignite coal of the province. These mines produced 6,926,629 tons at a net aggregate loss of $55,077.90 or a little less than 1c. a ton. This comparatively small difference on balance represents, however, large losses on the one hand and corresponding profits on the other. Putting in one group the operations, which in any one year showed a profit, and in the other group the operations, which in any one year showed a loss, gives the following:

TABLE 53—*Showing for the reporting lignite mines the aggregate profit and loss for the years* 1921 *to* 1924, *inclusive, according to results by individual mines and individual years. The mines included in this table produced sixty per cent of the merchantable lignite coal of the province.*

	Tons of Merchantable Coal	Profit or Loss Per Ton		Profit or Loss
Aggregate of Profitable Operations ...	3,576,911	Profit about 36c	Profit	$1,301,516.97
Aggregate of Unprofitable Operations .	3,349,718	Loss about 40c	Loss	1,356,594.87
All operations	6,926,629	Loss about .79c	Loss	$ 55,077.90

Analyzing this net aggregate loss, according to the results by mines for the whole four years, that is putting in one group all the mines, which on the results of the four years' operation showed a net aggregate profit, and in the other group the mines, which similarly showed a net aggregate loss, gives the following result:

TABLE 54—*Showing for the reporting lignite mines the aggregate profit and loss for the four years* 1921 *to* 1924, *inclusive, according to results by individual mines for the whole four years' operations. The mines included in this table produced about sixty per cent of the merchantable lignite coal of the province.*

	Number of Mines	Tons of Merchantable Coal	Profit or Loss Per Ton		Profit or Loss
Mines showing profit	14	2,815,663	Profit about 33c	Profit	$934,389.92
Mines showing loss	16	4,110,966	Loss about 24c	Loss	989,467.82
All mines	30	6,926,629	Loss about .79c	Loss	$ 55,077.90

Examining, year by year, the results for all the lignite mines taken together gives the following: In the year 1921, 1,594,216 tons of merchantable lignite coal (about fifty-nine per cent of such coal) were produced by the reporting mines at a net profit of $170,939.95 or about 11c. a ton. In the year 1922, 1,779,077 tons of merchantable lignite coal (about sixty-one per cent of such coal) were produced by the reporting mines at a net profit of $34,704.37 or about 2c. a ton. In the year 1923, 1,936,502 tons of merchantable lignite coal (about sixty-five per cent of

such coal) were produced by the reporting mines at an aggregate loss of $78,828.45 or about 4c. a ton. In the year 1924, 1,616,834 tons of merchantable lignite coal (about fifty-five per cent of such coal) were produced by the reporting companies at a net aggregate loss of $181,893.77 or about 11c. a ton. As before, the results for the whole four years was the production of 6,926,629 tons of merchantable lignite coal (about sixty per cent of such coal for the whole province) at a net aggregate loss of $55,077.90 or a little less than 1c. a ton.

Considering separately the profits and losses in each year, which are represented by the combined figures just given, the following tables give the mines making profits in each year and the mines making losses in each year:

TABLE 55—*Showing by years for all reporting lignite mines the aggregate profits of those mines making a profit in that year.*

Year	Number of Mines	Tons Produced at a Profit	Average Profit Per Ton	Profit
1921	13	1,009,474	About 39c	$396.450.42
1922	13	810,517	" 35c	287,834.20
1923	13	1,112,631	" 30c	329,666.47
1924	11	644,289	" 45c	287,565,88
All four years		3,576,911	About 36c	$1,301,516.97

TABLE 56—*Showing by years for all reporting lignite mines the aggregate losses of those mines making a loss in each year.*

Year	Number of Mines	Tons Produced at a Loss	Average Loss Per Ton	Net Loss
1921	10	584,742	About 39c	$225,510.47
1922	13	968,560	" 26c	253,129.83
1923	13	823,871	" 50c	408,494.92
1924	15	972,545	" 48c	469,459.65
All four years		3,349,718	About 40c	$1,356,594.87

8. Revenues per Ton

Sale of Coal: The revenue from the sale of coal is, naturally, dependent on the quantity produced together with the prevailing price. The General Questionnaire to operators asked for the prices, f.o.b. the mine in car lots, month by month for the four years 1921 to 1924, inclusive, for each grade of coal. A compilation of the replies is attached to this report as Appendix IX (not printed). Many of the replies showed variations in price within a single month and the whole record is too confusing to admit of summarizing. However, the following tabulation of the range in price will afford a general idea of the tendencies. The tabulation is made by classes of mines, picking out the particular grade that is most characteristic. The prices as reported by the mines are given for January in each of the four years and also for December, 1924.

TABLE 57—*Bituminous mines—Prices f.o.b. mine for run of mine coal*

	Per Ton
January, 1921	$4.40 to $5.84
" 1922	3.75 " 5.60
" 1923	3.47 " 5.60
" 1924	3.50 " 5.25
December, 1924	3.80 " 5.00

TABLE 58—*Sub-bituminous mines—Prices f.o.b. mine for lump coal.*

	Per Ton
January, 1921	$7.35
" 1922	6.65
" 1923	6.65 to $6.95
" 1924	5.50 " 7.00
December, 1924	5.50 " 6.68

TABLE 59—*Lignite mines (Division 5, Lethbridge)—Prices f.o.b. mines for lump coal.*

	Per Ton
January, 1921	$6.75 to $7.50
" 1922	6.25 " 6.75
" 1923	5.00 " 6.75
" 1924	4.25 " 6.50
December, 1924	5.00 " 6.50

TABLE 60—*Lignite mines (Division 8, Drumheller)—Prices f.o.b. mine for lump (or single screen lump) coal.*

	Per Ton
January, 1921	$4.60 to $6.70
" 1922	4.75 " 6.20
" 1923	4.00 " 5.80
" 1924	3.75 " 5.70
December, 1924	4.20 " 5.60

TABLE 61—*Lignite mines (Division 10, Pembina)—Prices f.o.b. mine for lump coal.*

	Per Ton
January, 1921	$4.35 to $6.10
" 1922	4.00 " 5.20
" 1923	3.57 " 4.60
" 1924	3.57 " 4.25
December, 1924	3.50 " 4.25

TABLE 62—*Lignite Mines (Division 11, Edmonton)—Prices f.o.b. mine for lump coal.*

	Per Ton
January, 1921	$4.50 to $5.25
" 1922	4.00 " 4.75
" 1923	3.50 " 4.25
" 1924	3.22 " 4.25
December, 1924	3.05 " 4.00

TABLE 63—*Lignite mines (Division 12, Tofield)—Prices f.o.b. mine for lump coal.*

	Per Ton
January, 1921	$3.50 to $4.75
" 1922	3.25 " 4.10
" 1923	2.50 " 3.60
" 1924	2.25 " 3.50
December, 1924	2.25 " 3.25

Even picking out individual months, it is hardly possible to generalize but, on the whole, there has been a distinct decline in prices throughout the four years, amounting on the average to well over one dollar a ton for lignite lump coal and over fifty cents a ton for bituminous run of mine. Since December 1924, owing to the decline in wages, there have been further reductions in the prices of all coals at the mine.

Other Revenues: In Appendix XI, which will be more fully described under "Costs" below, will be found a summary of the "other revenues," based on the returns from a number of mines. Such revenue is that from rents or other earnings from surface holdings of the Company, trading at Company stores, etc. It will be seen that, in the case of the bituminous mines, the returns under this heading vary from nothing to a maximum of forty-seven cents a ton, with an average ranging from eleven cents in 1921 to nineteen cents in 1924. On a per tonnage basis, the other revenue in the latter year makes a higher figure; because the revenue did not fall as rapidly as the tonnage in that strike year. For the lignite mines reviewed in the Appendix, other revenue varies from nothing to a maximum of forty cents a ton with an average range from nine cents to fifteen cents in the respective years.

It should be noted, in studying Appendix XI and in considering the statement that will shortly be given as to costs and revenue per ton, that the value of the coal used in the colliery is, in most instances, included on both sides of the account, being a charge against operation at so many cents a ton and, therefore, also included on the revenue side at the same figure. In the case of lignite mines, for such mines as show this item, it amounts to only two or three cents a ton, based on the merchantable coal produced. For the bituminous mines, however, the value of the coal used at the colliery ranges from an average of twelve cents to an average of twenty-one cents a ton, being slightly higher than the average cost per ton of power purchased, as shown by the returns of mines having that item instead.

9. Costs per Ton

A detailed statement of average costs per ton, based on replies to the Chairman's Questionnaire is given in Appendix XI of this Report. This Appendix gives for each of the four years the minimum, maximum and average under each item of cost. As indicated in the Appendix, the average is the average of those mines for which the information as to that item was available. In a number of cases, the returns grouped the costs in a different way to the questionnaire; for example, material and supplies were given as one item and not divided into underground and surface; similarly, all labor costs were given as one item, not divided into surface and underground. These variations in reporting made it impossible to get at an average under each particular item so that these averages could be added up to the total average cost. However, even with these limitations, the

information will be of interest. For all mines, it was possible to give a total of the underground and surface costs, before adding the items which will next be discussed.

Administration, office and selling expense was asked for and was given in a form in which it could be used, with very trifling exceptions. However, the results under this heading must be viewed with caution, because of the different methods of marketing coal. While it is a matter of indifference to the net result, whether all the selling expense be carried by the mine and charged against the cost of coal and the revenue shows as the gross price per ton, or, in the alternative, if the output is contracted for in such a way that the mine is relieved of all selling expense and thereby both cost and revenue correspondingly reduced, these two methods, although they give the same net result, have a very different effect on the figures for cost per ton and revenue per ton, taken separately. The great variation shown in the figures for administration, office and selling expense may, therefore, be ascribed in considerable measure to this feature.

The remaining items of general expense such as rentals, royalties, the Alberta Government Coal Tax, other taxes, Workmen's Compensation and insurance do not call for special comment. Taken altogether, as will be seen by the Appendix, they amount to more cents per ton than is generally realized and together make a substantial increase in the cost of coal.

There are also included in the cost allowances for depreciation, amortization of development, depletion, reserves for contingencies, as well as the item of interest on adjusted capital, which has already been discussed at length in the earlier part of this chapter, and, finally, the amount of the Dominion Government Income Tax. It may be mentioned that depletion is only allowed by the Income Tax authorities in the case of freehold coal; although it is a common practice for other operators to include this item usually at ten cents a ton. Since, in general, the financial statements appeared to the chairman to be, if anything, deficient in the matter of providing reserves, this item of depletion has been allowed as charged, even in the case of leasehold operations. Once more, the item of interest on adjusted capital has been taken at eight per cent; because that seemed a moderate figure not open to criticism. In the bituminous mines, this item, for the year 1923, averaged forty-two cents a ton, being, therefore, equivalent to eight per cent on a capital charge per ton produced of $5.25. That this is a very moderate figure of capitalization may be gathered from the following statement, taken from the Report of the United States Coal Commission. This statement is based only on mines with an output of 250,000 tons or more per annum and certain exceptions were made even from such operations but, in the aggregate, the mines reported produced about thirty per cent of the bituminous tonnage of the United States.

TABLE 64—*Investment per ton of certain United States bitu inous mines in the Divisions and for the years indicated.*

Grand Division—	Number of Companies	1918-1922 Average Yearly Production	Investme Per Ton
Northern Appalachian	95	80,720,377	$7.06
Southern Appalachian	17	9,174,699	6.34
Eastern Interior	47	36,644,838	2.31
Western Interior and Southwestern	3	2,446,930	5.96
Great Plains, Rocky Mountains and Pacific Coast	13	13,363,049	9.10
Total	175	142,349,893	5.95

In the case of the lignite mines analyzed in the Appendi the average charge per ton for interest on adjusted capital wa in the neighborhood of sixteen cents, corresponding to a capita ization of about two dollars per ton of normal output. In bot cases, the charge from this cause increases very rapidly in year of short production, the average charge for the bituminous mine in the big strike year of 1924 being ninety cents a ton.

To revert to the comparison with the American figures jus given, it should be borne in mind that these are the largest mine in the United States, that their investment figures include thei own book values on their holdings of coal rights, which the U. S Commission did not attempt to scrutinize, and that they are th mines which have installed all the most expensive modern equip ment. By so doing, they have been able to reduce the operatin cost per ton.

As will be seen, Appendix XI, giving the detailed statemen of costs, deals only with the bituminous mines, as one group and the lignite mines of the central field, as another group. Fo the sub-bituminous field, the great disparity between the strip ping pits and the ordinary mines made minimum and maximum figures and averages quite meaningless. Where all operations are grouped at the ends of a range, an average figure represents nothing because no operations are, in fact, conducted at or near that average. In the southern and northern lignite fields, the operations are, likewise, not uniform enough and the information was not sufficiently complete to have the same value for averag ing.

10. Total Costs, Total Revenues and Net Profits and Losses per Ton

Bearing in mind all the foregoing explanations, tables will now be given for the total average costs, revenues and profits and losses per ton, for the various groups and the various years. Here again, the sub-bituminous mines must be omitted because, in their case, average figures would be of no value, being merely the mean of two extremes. In each of the following tables, the percentage reporting is shown, being the percentage which the merchantable output of the reporting mines bore to the total mer-

chantable output for all mines of the class, in the respective years:

TABLE 65—*Showing for the reporting bituminous mines the average total cost and the average total revenue per ton with the resulting average profit or loss per ton, with an indication of the reporting base as the percentage which the output bore to the total of the class.*

Years	Percentage Reporting	Average Total Cost Per Ton Including Gov't Income Tax	Average Total Revenue Per Ton	Average Profit Per Ton	Average Loss Per Ton
1921	83%	$5.04	$5.32	28c	
1922	100%	5.27	5.14		13c
1923	100%	4.64	4.87	23c	
1924	93%	5.66	4.82		84c
All four years	95%	$5.0446	$5.0421		¼ c

TABLE 66—*Showing for the reporting lignite mines Group "A" (Lethbridge, Medicine Hat and Brooks) the average total cost and the average total revenue per ton with the resulting average profit or loss per ton, with an indication of the reporting base as the percentage which the output bore to the total of the class.*

Years	Percentage Reporting	Average Total Cost Per Ton Including Gov't Income Tax	Average Total Revenue Per Ton	Average Profit Per Ton	Average Loss Per Ton
1921	84%	$6.06	$6.19	13c	
1922	78%	6.01	5.74		27c
1923	85%	5.91	5.59		32c
1924	64%	6.17	5.26		91c
All four years	79%	$6.02	$5.76		26c

TABLE 67—*Showing for the reporting lignite mines Group "B" (Drumheller and Ardley) the average total cost and the average total revenue per ton with the resulting average profit or loss per ton, with an indication of the reporting base as the percentage which the output bore to the total of the class.*

Years	Percentage Reporting	Average Total Cost Per Ton Including Gov't Income Tax	Average Total Revenue Per Ton	Average Profit Per Ton	Average Loss Per Ton
1921	55%	$4.48	$4.52	4c	
1922	69%	3.97	4.16	19c	
1923	73%	3.78	3.90	12c	
1924	55%	3.63	3.80	17c	
All four years	63%	$3.93	$4.07	14c	

TABLE 68—*Showing for the reporting lignite mines Group "C" (Pembina, Edmonton and Tofield) the average total cost and the average total revenue per ton with the resulting average profit or loss per ton, with an indication of the reporting base as the percentage which the output bore to the total of the class.*

Years	Percentage Reporting	Average Total Cost Per Ton Including Gov't Income Tax	Average Total Revenue Per Ton	Average Profit Per Ton	Average Loss Per Ton
1921	40%	$3.61	$3.80	19c	
1922	39%	3.12	3.10		2c
1923	39%	3.14	3.07		7c
1924	52%	2.816	2.801		1½c
All four years	42%	$3,123	$3.138	1½c	

TABLE 69—*Showing for all reporting lignite mines the average total cost and the average total revenue per ton with the resulting average profit or loss per ton, with an indication of the reporting base as the percentage which the output bore to the total of the lignite output of the province.*

Years	Percentage Reporting	Average Total Cost Per Ton Including Gov't Income Tax	Average Total Revenue Per Ton	Average Profit Per Ton	Average Loss Per Ton
1921	59%	$4.96	$5.07	11c	
1922	61%	4.37	4.39	2c	
1923	65%	4.28	4.24		4c
1924	55%	3.89	3.78		11c
All four years	60%	$4.37	$4.36		1c

TABLE 70—*Showing for all reporting mines the average total cost and the average total revenue per ton with the resulting average profit or loss per ton, with an indication of the reporting base as the percentage which the output bore to the total output of the province.*

Years	Percentage Reporting	Average Total Cost Per Ton Including Gov't Income Tax	Average Total Revenue Per Ton	Average Profit Per Ton	Average Loss Per Ton
1921	75%	$4.91	$5.15	24c	
1922	76%	4.774	4.769		½c
1923	84%	4.45	4.55	10c	
1924	69%	4.54	4.14		40c
All four years	76%	$4.65	$4.66	1c	

11. Comparison with Bituminous Mines of the United States

In considering the following table, taken from the Report of the United States Coal Commission, and comparing it with the results in Alberta, several differences must be kept in mind. The American table deals with the cost f.o.b. the mine, not including selling expense, and on the revenue side with the net selling price. All items connected with the selling coal were carefully excluded from the returns of such companies as handled the dis-

posing of their own product. The items thus omitted covered commissions, salesmen's salaries and expenses and general sales office expense. No indication is given in the Report as to the difference it would make if selling expense were included on both sides of the account, as it is in the Alberta figures. The "margin" shown in the American table is the difference between the sales realization per ton and the f.o.b. mine cost per ton and is subject, in the first instance, to deduction for Federal taxes and then to the payment of interest. As the United States Report says: "The margin necessary to a profitable operation varies greatly from operator to operator. One operator may have a heavy investment in mining, while another operator may have a small investment but a high labor cost. In the case of the first operator, the margin must be larger in order to give an equal rate of remuneration to the larger amount of invested capital per ton of product." In considering the American figures, then, an amount must be added to both sides of the account for selling expense and from the margin shown must be deducted the Federal taxes and an allowance for return on capital; before the figures would be on a basis, comparable to that used for the province of Alberta.

TABLE 71—*From the United States Coal Commission Report. Average labor and total f.o.b. mine costs, sales realizations and margins per ton of* 1,180 *operators in* 83 *fields for the year* 1922.

Region—	Costs		Sales Realization	Margin
	Labor	Total f.o.b. Mine		
Northern Appalachian	$1.74	$2.64	$2.98	$0.34
Southern Appalachian	1.49	2.28	2.65	.37
Eastern Interior	1.95	2.54	3.02	.48
Western Interior and Southwestern	3.03	3.94	3.88	.06 (loss)
Great Plains, Rocky Mountains and Pacific Coast	2.02	2.88	3.30	.42
United States	$1.84	$2.65	$3.01	$0.36

12. Dividends

In Section 2 on Capitalization, it has been pointed out that it is a matter of indifference in what form the permanent investment has been provided, whether by issuing common or preference stock, bonds or other securities or by loans, etc., or by a combination of these methods. In the same broad sense, dividends should comprise all returns made on the capital thus provided. In a narrower sense, dividends are commonly understood to be the payments made to the holders of preference or common stock. Such dividends are, generally a matter of public record and a fairly complete account of them has been secured but to give these and omit the other forms of return on capital would be to give an incomplete statement. The chairman, therefore, has come to the conclusion that, in this matter of dividends, his record is not clear enough or complete enough to warrant its

inclusion in this Report. Even if ascertainable, a statement o dividends paid is apt to be misleading. After all, what is o importance is to know what profits were made, not how tho profits have been disposed of. That becomes a matter of ind vidual policy. Some companies may pay out in dividends all th profits they make. A more conservative policy is to distribu only a part and keep something in hand for contingencies. I any case, the dividends declared and paid in any year are, fo the most part, not out of profits earned in that year but out o the profits of the preceding year of the company, together wit the carry forward from previous years. The dividends declare in 1921 would, generally speaking, be based on the business o the year 1920, with some regard to the prospects of the curre year up to the time, when the decision is made as to what div dend can in prudence be distributed. A statement of dividend paid by the various classes of coal mines for the four years un der review, namely 1921 to 1924 inclusive, even if complete an accurate, would not assist an understanding of the progress o the industry during those years. Once more, it is the profits o losses that count in this connection and not what disposition i made of the one or provision made for the other.

13. Summary of Financial Results

All the foregoing part of this chapter is an attempt to pre sent an account of the real position of the Alberta coal industry on the financial side. In a purely cash way, an enterprise ca carry on for a considerable time, without providing for obsole cence, depreciation or other reserves and without earning any re turn on its capital; but it cannot do so indefinitely nor can it in the meantime, attract fresh capital for improvements and ex pansion. To disclose the real position, these items must be in cluded, as they have been in this chapter; although, for the rea sons given, this has been done on a conservative scale. Assuming however, that the allowances have been sufficient and that th results for the reporting mines can be taken as representing th whole industry, the following general conclusions may be drawn

(*a*) The aggregate result of the four years' operations o all mines was, as nearly as possible, an even break (Ta ble 34—net profit less than one cent a ton on the output)

(*b*) This remarkably balanced result was, however, (Tabl 35) made up of nearly half the number of mines, makin a profit in the four years of two and a half million dol lars, and over half the mines, losing nearly as much.

(*c*) On a tonnage basis but taking the results of individua mines for the whole four year period, nearly sixty pe cent of the output was produced at a profit, averagin about twenty-six cents a ton, and a little more than fort per cent of the tonnage was produced at a loss, averag ing about 32c. a ton (Table 35).

(*d*) In the bituminous mines (Table 39), an even break o the whole operations was made up by half the mines

making a profit of nearly one and a quarter million dollars, and the other half, losing the same amount.

(*e*) In the bituminous mines by tons (Table 39), nearly seventy per cent of the tonnage was produced at a profit, averaging about 20c. a ton and a little over thirty per cent at a loss, averaging about 43c. a ton.

(*f*) In the sub-bituminous mines (Table 42), a net profit of nearly one quarter of a million dollars was the result of some mines making a profit of nearly half a million dollars and the rest losing nearly one quarter of a million.

(*g*) In the lignite mines (Table 54), the practically even break resulted from about half of the mines, making a profit of nearly a million dollars and the other half losing a little more.

(*h*) For the lignite mines on a tonnage basis, about forty per cent was produced at a profit, averaging 33c. a ton and the other sixty per cent at a loss of about 24c. a ton (Table 54).

(*i*) For the lignite mines by districts, however, the approximately even break really represented losses in the southern field (Table 44), of over half a million dollars, profits in the central field (Table 46), of nearly half a million dollars and in the northern field (Table 50), a little better than an even break.

(*j*) Examining the records by years, the bituminous mines in 1921 and 1923 together, made one and one-half million dollars which they lost in 1922 and 1924. The sub-bituminous mines made profits in 1921 and 1922 and losses in 1923 and 1924. The southern lignite mines made a small profit in 1921 and losses in the other three years. The central lignite mines made profits in each of the four years. The northern lignite mines made a profit in 1921 and a small loss in the other three years. Lignite mines in the aggregate made profits in 1921 and 1922 and losses in 1923 and 1924. All mines in the grand aggregate made profits in 1921 and 1923 of about a million and a half dollars and losses in 1922 and 1924 of a like amount.

It may be well to repeat, what has been pointed out in detail under each heading, that the above aggregate results by kind of coal and field were the resultant of divergent results for individual mines. Obviously, the strikes of 1922 and 1924 must be held, in a general way, accountable for the losses in those years. It would be quite wrong, however, to say that the strike was directly responsible for the whole of the loss. The bituminous mines for the year 1923 enjoyed a certain amount of business in anticipation of the strike, which was expected in 1924. It would, however, be safe enough to say that, but for these strikes, on the whole each year would have shown at least a moderate profit in the coal industry of Alberta.

It is always easy to be wise after the event. Obviously, a much more satisfactory showing could have been made if it had

been possible, in some way, to dispense with the operations that for the four years, were carried on at a loss, adding that much to the tonnage of the profitable operations and thereby enabling them to make a still more favorable showing. But, even if the machinery had existed for doing this, there would have been the difficulty of selecting in advance which were going to prove the profitable operations. Even in retrospect, it must remain an unanswered question as to whether the disparity in financial results as between companies, was due entirely to natural conditions or may be ascribed, in part, to differences in management and salesmanship. The measures for the improvement of the industry which may seem at a first glance to be suggested by the summary of financial results just given, must be considered in the light of the whole of this Report.

CHAPTER VI.

MARKETING

A. GENERAL SURVEY

Before proceeding to a discussion of each market in its relation present or prospective to the coal industry of Alberta some general tables are given for reference. These tables are taken from various publications and show some discrepancies:

1. Coal Consumption in Canada

TABLE 72—*Coal consumption in Canada by years, showing amounts and percentages of Canadian and imported coal and consumption per capita.*

Calendar Year	Canadian Short Tons	%	Imported Short Tons	%	Total	Per Capita Short Tons
1886.....	1,595,950	45.9	1,884,161	54.1	3,480,111	0.758
1887.....	1,848,365	45.7	2,192,260	54.3	4,040,625	0.871
1888.....	2,013,925	37.8	3,314,353	62.2	5,328,278	1.137
1889.....	1,992,988	44.4	2,490,931	55.6	4,483,919	0.946
1890.....	2,360,196	47.8	2,581,187	52.2	4,941,383	1.031
1891.....	2,606,490	46.7	2,980,222	53.3	5,586,712	1.153
1892.....	2,464,012	44.4	3,083,429	55.6	5,546,441	1.133
1893.....	2,823,187	47.6	3,110,462	52.4	5,933,649	1.198
1894.....	2,743,376	48.5	2,917,818	51.5	5,661,194	1.130
1895.....	2,467,109	45.7	2,933,752	54.3	5,400,861	1.066
1896.....	2,639,055	45.1	3,206,456	54.9	5,845,511	1.140
1897.....	2,799,977	47.3	3,124,485	52.7	5,924,462	1.143
1898.....	3,023,079	48.0	3,274,981	52.0	6,298,060	1.200
1899.....	3,631,882	47.0	4,092,361	53.0	7,724,243	1.454
1900.....	3,989,542	47.8	4,361,563	52.2	8,351,105	1.561
1901.....	4,912,664	50.5	4,810,213	49.5	9,722,877	1.810
1902.....	5,376,413	51.0	5,165,938	49.0	10,542,351	1.927
1903.....	6,005,735	52.2	5,491,870	47.8	11,507,605	2.055
1904.....	6,697,183	49.2	6,909,651	50.8	13,606,834	2.346
1905.....	7,032,661	48.9	7,343,880	51.1	14,376,541	2.362
1906.....	7,927,560	51.7	7,398,906	48.3	15,326,466	2.425
1907.....	8,617,352	45.0	10,549,503	55.0	19,166,855	2.947
1908.....	9,156,478	47.3	10,195,424	52.7	19,351,902	2.820
1909.....	8,913,376	47.9	9,711,826	52.1	18,625,202	2.682
1910.....	10,532,103	50.2	10,438,123	49.8	20,970,226	2.960
1911.....	9,822,749	40.5	14,424,949	59.5	24,247,698	3.365
1912.....	12,385,696	46.0	14,539,104	54.0	26,934,800	3.657
1913.....	13,450,158	42.6	18,132,387	57.4	31,582,545	4.196
1914.....	12,214,403	45.5	14,637,920	54.5	26,852,323	3.490
1915.....	11,500,480	48.1	12,406,212	51.9	23,906,692	3.041
1916.....	12,348,036	41.3	17,517,820	58.7	29,865,856	3.717
1917.....	12,313,603	37.2	20,810,132	62.8	33,123,735	4.049
1918.....	13,160,731	37.8	21,611,101	62.2	34,771,832	4.175
1919.....	11,849,046	41.1	16,982,773	58.9	28,831,819	3.401
1920.....	14,388,541	40.9	20,815,596	59.1	35,204,137	4.079
1921.....	13,070,217	41.9	18,103,620	58.1	31,173,837	3.547
1922.....	13,338,849	48.3	14,257,424	57.7	27,596,273	3.078
1923.....	15,336,165	40.3	22,687,320	59.7	38,023,485	4.157

TABLE 73—*Coal consumption in Canada by years, showing amounts and percentages of each character of coal, anthracite, bituminous, lignite.*

Calendar Year	Anthracite Short Tons Millions	%	Bituminous Short Tons Millions	%	Lignite Short Tons Millions	%	Total Short Tons Millions
1918.....	4.9	14.1	26.6	76.6	3.2	9.3	34.8
1919.....	5.0	17.5	20.8	72.3	2.9	10.2	28.8
1920.....	5.	14.3	26.5	75.2	3.7	10.5	35.2
1921.....	4.6	15.	23.2	74.5	3.3	10.5	31.1
1922.....	2.7	10.	21.4	77.5	3.5	12.5	27.6
1923.....	5.2	13.6	29.3	76.9	3.6	9.5	38.1

TABLE 74—*Canada's coal balance sheet (in millions of short tons.)*

	1913	1915	1916	1917	1918	1919	1920	1921	192
Production . .	15.0	13.3	14.5	14.0	14.9	13.7	16.9	15.0	15.
Exports . . .	1.5	1.8	2.1	1.7	1.8	2.1	2.5	1.9	1.
Net	13.5	11.5	12.4	12.3	13.1	11.6	14.4	13.1	13.
Imports—									
Bituminous	13.5	8.4	13.0	15.5	16.9	12.4	15.9	13.5	11.
Anthracite.	4.6	4.0	4.5	5.3	4.8	4.9	4.9	4.6	2.
Consumption.	31.6	23.9	29.9	33.1	34.8	28.9	35.2	31.2	27.

TABLE 75—*Coal consumption in Canada, by provinces, for the year* 1923.

SHORT TONS

Province	Anthracite	Bituminous	Lignite	Total
Nova Scotia	53,739	3,791,303	.....	3,845,04
New Brunswick	90,343	795,020	.....	885,36
Prince Edward Island...	4,303	83,680	.....	87,98
Quebec	1,816,409	4,700,770	.....	6,517,17
Central Ontario	3,062,208	11,742,856	51,331	14,856,39
Head of lakes and Manitoba	138,414	2,537,958	701,615	3,377,98
Saskatchewan	2,291	121,192	1,338,610	1,462,09
Alberta	107	3,519,224	1,419,539	4,938,87
B.C. and Yukon	174	1,979,068	73,331	2,052,57
Total tons	†5,167,988	*29,271,071	3,584,426	38,023,48

† Of which United States supplied 4,906,222 tons and Great Britain 261,659 tons.

* Of which United States supplied 17,248,298 tons and Great Britain 268,810 tons.

The above table shows consumption "Head of Lakes and Manitoba." It is possible that Saskatchewan should share this tonnage. But the table is a vast improvement over those usually published giving importations into Canada and including as "Destination —Ontario" all the imports through Port Arthur and Fort William. It is true those ports of entry are in Ontario; but the great bulk of the coal is destined for consumption in Manitoba and to some extent Saskatchewan. The Canadian figures of coal imports thus furnish no direct guide to the possible market in individual localities or provinces. The American figures of coal export are for the same reason of little use for this purpose and are not given in this report.

It is very desirable that the Dominion Bureau of Statistics in co-operation with the Customs Department and the Railways should arrive at accurate figures for the consumption in the various provinces and particularly in the provinces of Manitoba and Saskatchewan. The problem is recognized in the report of the Bureau but is met by giving figures for Head of Lakes and Manitoba combined. This is not entirely satisfactory, so far as the Alberta coal industry is concerned, and, in the interests of that industry, some plan should be worked out for ascertaining separate figures for Saskatchewan, Manitoba and Western Ontario.

With this caution as to uncertainty of final destination the figures for imports through Port Arthur, Fort William and Fort Francis are as follows:

TABLE 76—*Imports of coal at Fort William, Port Arthur and Fort Francis.*

IN SHORT TONS

Year	Bituminous	Anthracite	Total
1919	1,607,037	466,215	2,073,252
1920	2,075,536	296,330	2,371,866
1921	2,103,874	261,028	2,364,902
1922	2,030,351	57,537	2,087 888
1923	2,446,143	82,987	2,529,130
1924	1,974,172	89,525	2,063,697

B. MARKETS FOR ALBERTA COAL

2. General Survey of Alberta's Markets

Before discussing each market for Alberta coal, it will be well to give statistics year by year showing all markets. Appendix VI is a compilation of such statistics showing, according to character of coal and Coal Mining Divisions, the disposition of the total output for the years 1917 to 1925 inclusive. For the years 1917, 1918 and 1919 shipments to railways were not reported separately but were included with the amounts shipped for consumption within the Provinces of Alberta and Saskatchewan. Sub-bituminous coal was not shown separately until the year 1922 but was included as part of the bituminous shipments. With these exceptions, the tabulation is complete as described. The explanation which precedes Table 18 in Chapter III applies equally to the tabulation in Appendix VI, it being necessary to fit the old mining "districts" into the mining "divisions." As stated, the inaccuracy resulting from this process applies only to the years 1917 to 1922 and is not serious even for those years. Appendix VI may therefore be examined for the general course of marketing by years.

A better general idea will be obtained by a study of Plate II, which gives the shipments month by month to the several markets. The monthly figures from which this chart was made will be found in the annual reports of the Mines Branch and are not reproduced here. It will be seen that for the years 1917, 1918 and 1919 the coal sold to railways was included with the other sales in the provinces of Alberta and Saskatchewan; but since that time

railway coal is shown separately except that some railway coa is included in the shipment to Saskatchewan in the years 192 and 1922. A study of this chart will reveal the highly irregula character of the sales in all the markets, the cumulative effect o which is shown in the chart of total production. The nature o these variations and the probabilities for the future will be take up under the heading of each individual market.

3. Railway Market

Importance—The great importance of the railway market t the bituminous and sub-bituminous mines and its relation to th whole coal industry of the province will appear from the follow ing table:

TABLE 77—*Coal sold for railway consumption according to Mine Branch reports.*

	Bituminous Mines		Sub-Bituminous Mines		Total	
Year	Tons of 2,000 lbs.	% of Production	Tons of 2,000 lbs.	% of Production	Tons of 2,000 lbs.	% of Productio of Provinc
1920 . .	2,506,507	73.3	.....	.....	2,506,507	37
1921 . .	2,016,444?	69.6?	.....	.....	2,016,444?	34.5?
1922 . .	1,679,092?	75.8?	394,944	62.2	2,074,036?	34.9?
1923 . .	2,860,928	88.3	249,193	53.8	3,110,121	45.3
1924 . .	1,280,999	84.6	332,575	56.2	1,613,574	31
1925 . .	1,850,152	86.2	289,564	49.8	2,139,716	36.4

Although the shipment of coal to railways has been reporte separately since the beginning of the year 1920 an examinatio of the shipments of bituminous coal reveals the fact that in th years 1921 and 1922 part of the tonnage destined for railway us was returned to the Mines Department and published in it annual reports as "shipped for consumption in Saskatchewan" (see Section 5 of this chapter). The extent of this error wa probably about 170,000 tons in 1921 and 150,000 tons in 1922 an these amounts should be added to the above figures for the re spective years. It is impossible now to ascertain accurately wha this tonnage was and accordingly the amounts and percentage for the years 1921 and 1922 are shown with a question mark.

Historical: Appended hereto as Appendix VIII (not printed) are maps of the C.P.R. and C.N.R. in Western Canada showin the lines colored according to the origin of the coal that was bein consumed by the railways in the year 1925. The idea of this ma is taken from a similar map, published in the volume on the Con servation of Coal in Canada, issued by the Commission of Con servation. It is very interesting to compare the map of 191 with the map of 1925. In 1911, coal from the U.S. was being use for all of Manitoba and about the eastern two-thirds of Sas katchewan. Alberta coal supplied the province of Alberta and th western third of Saskatchewan and a small part of eastern B.C. In the map of 1925 the part of the corresponding territory sup plied by coal from the U.S. stops at Winnipeg; and Alberta coa

supplies practically the whole of Manitoba, including part of the railway coal used east of Winnipeg, all Saskatchewan, all Alberta, and a considerably larger part of British Columbia.

Total Consumption: In the information which follows, it should be noted that the "Western Region" of the C.N.R. practically coincides with the C.P.R. "Western Lines." Both extend from Port Arthur, Fort William and Armstrong (on the C.N.R.) west to the Pacific Coast, including in the C.N.R. the branch line from Fort Francis to Duluth. This has made it possible to combine the statistics as to coal consumption and coal deliveries on the two great railways. In what follows therefore, the territory that is dealt with is from the ports on Lake Superior to the Pacific Coast:

TABLE 78—*Consumption of railway fuel in Western Canada on Western lines of C.P.R. and Western region of C.N.R., being from Fort William and Port Arthur on the east to Vancouver and Prince Rupert on the west, including C.N.R. from Fort Francis to Duluth and lines in Vancouver Island.*

	1921	1922	1923	1924
January	368,879	252,042	358,640	357,862
February	314,445	239,420	311,342	299,356
March	333,649	274,055	328,290	288,448
April	281,917	198,307	283,100	249,318
May	234,174	213,941	279,682	272,273
June	225,432	214,978	247,686	302,435
July	253,233	237,203	324,015	263,694
August	298,748	259,138	294,812	226,111
September	370,790	388,078	364,670	248,621
October	446,128	491,521	536,493	372,412
November	402,460	480,561	539,504	427,615
December	344,860	444,826	488,185	358,095
	3,874,715	3,694,070	4,356,419	3,666,240

Ten months to October 31, 1925—2,783,291.

Variations in Consumption: The marked annual variation in the consumption of coal by the railways is the result of variations in the volume of traffic. That consumption reached its peak in 1923. The drop in consumption in 1924 was due primarily to diminished traffic. It was, also, partly due to operating economies which will be discussed later. For the year 1925, traffic was light the first part of the year and, even with the heavy grain movement in the latter part of the year, it is apparent that the total figures will not reach 1923. In a general way, it may be said that, for the last two years, there have been decreases in traffic up till July, 1925, since when there has been an improvement. The seasonal variations in consumption, as disclosed by the monthly figures, are of considerable importance. Dealing particularly with the part of the railway market that is supplied by Alberta coal, it may be said, broadly, that the consumption in the four months, September to December inclusive, is practically equivalent to that of the first eight months of the year.

Prospective Consumption: As to future prospects, increased consumption by the railways will come mainly through increased

population and increased business. As against this, they are continually achieving operating economies. The officials of one railway stated that, in the past ten years in the freight service there had been a decrease of 20 per cent in the fuel consumption per 1,000 gross ton miles; but that any further reduction by operating economies would probably come more slowly. Officials of the other railway system expressed the opinion that the next ten years might show 10 per cent or even a much greater reduction in coal consumption to handle the same amount of traffic. In this connection, a tabulation on fuel conservation in the freight service on Class 1 railways in the United States, for the years 1920-24, shows a saving in the fuel bill of 1924 over that of 1920, on account of decreased consumption for the same service, of $39,000,000 on a total fuel bill in 1920 of $378,000,000.00 or more than 10 per cent in the four years. For the western district, alone, in the freight service on the same railways, the saving in the fuel bill on account of decreased consumption per ton miles was nearly $18,000,000.00 on a total fuel bill of $138,000,000.00, or over 17 per cent in the four years.

Powdered Coal: Inquiries were made as to the use of powdered coal on locomotives, as that might have a bearing on certain problems of preparation in Alberta mines; but, while some experiments have been made in the U.S., the Commission could not discover that any railway line there was using this method in a practical way and it remains something for the future.

Electrification: Electrification of railways has a bearing on the coal market. The Commission was unable to discover any important prospective development along this line. If such development occurs it will, in the first instance at least, displace oil rather than coal.

Oil: As to the use of oil on locomotives, the C.N.R. have been using it on the Smithers Division, practically ever since the line was opened, and, if anything, the use of oil is extending. They are using California and some Montana oil. On the C.P.R., oil is being used from Field to Revelstoke, on three passenger engines from Calgary to Field and on the yard engines in Vancouver. So far as the C.P.R. is concerned, the use of oil is, if anything, decreasing at the present time; and it is now being used not for economy but from the standpoint of conservation of the forests. If any new source of oil develops that will give it at a lower price to the railways, it might have an important bearing on the consumption of coal in Western Canada. Depending naturally on quality and conditions, it may be taken roughly that four barrels of oil are equivalent to one ton of coal; but there are additional operating economies in the use of oil.

Alberta's Share: In the following table are given the total receipts and the Alberta purchases showing the percentage of the latter to the former. The Commission has not recorded in detail the source of the other coal but the maps (not printed) will indicate clearly enough the position in this respect:

TABLE 79—*Purchases of railway fuel in Western Canada on Western lines of C.P.R. and Western region of C.N.R. being from Fort William and Port Arthur on the east to Vancouver and Prince Rupert on the west, including C.N.R. from Fort Francis to Duluth and lines in Vancouver Island.*

Year	Total Receipts Tons	Receipts Alberta Coal Tons	Per cent Alberta	Mines Branch Report Total Alberta Shipments to Railways
1921.....	3,660,885	2,186,500?	59.7?	2,186,500?
1922.....	3,923,465	2,224,000?	56.7?	2,224,000?
1923.....	5,206,494	3,132,140	60.16	3,110,121
1924.....	3,441,013	1,614,564	46.92	1,613,574
1925 (to Oct. 31)	2,743,864	2,005,885	73.10	1,813,913

Note—In the above table the figures of Alberta receipts for 1921 and 1922 were not available from both railways and the shipments given by the Mines Department as Alberta shipments to railways have been used instead with the necessary correction in those figures explained in the foot note to Table 77. Because of this correction round figures are used and queried. For the years 1923 and 1924 the figures returned by the railways show a close agreement with the figures for Alberta shipments to railways. For the first ten months of 1925 there is for some reason not the same close agreement. This may right itself when the returns for the complete year 1925 are made.

Variations in Purchases: It will be seen from the above table that the annual variations in the receipts of coal by the railways are greater even than the variations in annual consumption. The year 1923 shows a much greater excess of receipts over the preceding and following years than can be explained solely on the ground of the greater consumption in that year. The general explanation of this is that the stock carried over from 1922 was low and had to be restored to a normal basis. In addition, labor trouble was anticipated not only here but in the U. S. and a large quantity of coal was put in stock to provide for this emergency. In 1924 consumption fell off. The strike in the U. S. did not materialize. On the other hand the Alberta mines went on strike; so that for the whole of that year reserve stocks were largely being drawn on. For the current year, the Alberta mines were not working until April and the deficiency was made up by coal shipped in from the B. C. Crowsnest area and from stock. When the Alberta mines did start up, they received orders although there was still coal in stock. The Commission has not ascertained the exact amount of coal in storage on the railways at definite periods but believes that the condition in this respect is more or less normal at the present time; and storage, which is the balancing factor in the annual variations above referred to, should not prove a disturbing factor in the market in the immediate future.

General Policy: As to the general policy, the Commission received emphatic assurances from officials of both railways that, given a regular and dependable supply of suitable quality at a suitable price, the railways of Canada are prepared to go the limit in giving preference to Canadian coal. As between one Canadian coal and another, the question must, naturally, be decided on strictly business grounds. The great increase in the

use of Alberta coal to the exclusion of American coal, as revealed by the comparison of the map of 1925 with that of 1911, must be set down in part to this general policy. Beginning about November, 1924, there has been a definite policy of discontinuing the use of American coal west of Winnipeg, except under emergency conditions. The present policy is to take Alberta coal right into Winnipeg for eight months in the year and, as will appear later, there has recently been a still further extension eastward. The reduction in wages in October, 1924, and the still further reduction this year have had an important bearing on this extension of the market. The Commission received from one of the locals of the U. M. W. A. a recommendation that the use of American steam coal be prohibited west of Winnipeg. It will be seen by the above that this is the policy on which the railways have themselves determined. In giving evidence before the Commission, several of the operators recognized the sympathetic attitude of the Canadian railways and gave them credit for their desire to use Canadian coal wherever possible.

Regularity of Supply: Such, then, is the general policy but the practical working out of it involves the problems of regularity of supply, quality and price. The railways must, at all times, take steps to protect themselves against a complete stoppage of the supply from Canadian mines and, even short of complete stoppage, irregularity of supply creates traffic difficulties for the railway in the distribution of rolling stock and in the work at storage points. Coal from somewhere must be coming forward as uniformly as possible in order to keep the stocking crews busy at the various points. Like other markets, the operators and mine workmen of Alberta must realize that, if they are to enjoy the fullest measure of the railway market, they must arrange for the utmost regularity in supplying the coal.

Quality: As to quality, Alberta operators have in the past been met with a certain amount of prejudice in favor of American coal. There was a natural reluctance to any change, those using the coal preferring the kind to which they have become accustomed. The chief claim for superiority of the American coal was on account of its physical condition. In cold weather, when the coal cannot be wetted down, there was said to be some loss of Alberta coal in fines through the smoke-stack but this trouble was not so pronounced with the coals which coke. In changing from one coal to another, the engines have to be drafted differently, the American coal on account of its physical condition standing a heavier draft. The great expansion of the railway market for Alberta coal above referred to shows that this initial reluctance to change on the part of firemen and others has been successfully overcome. Railway officials stated to the Commission that the Alberta coal they are now getting shows better preparation than ever before; and that the various washeries that have been and are being installed are reducing the ash content. With regard to the general opinion above recorded and the tests on which it is based, it should be noted that such tests have in general been made by men more accustomed to American coal.

Alberta operators claim on the average an equal degree of superiority, at least over the American coal that is shipped to Western Canada, and point for one thing to the more complete combustion of Alberta coal, as witness the absence of smoke.

Cost Delivered: As to price, at the present time strictly on the basis of the cost laid down of an individual carload of coal, the dividing line between Alberta and American coal would be a little west of Winnipeg. The Commission understands that coal could be purchased in the summer of 1925, in the U. S. for as low as $1.40 a ton at the mine. Such coal could be laid down at the head of the lakes as follows:

Mine	$1.40
Freight to American lake ports and dumping	1.99
Vessel freight	.30
Duty	.50
Dockage	.50
	$4.69

Ohio coal apparently costs—

At the mine	$2.00
Freight to American lake ports and dumping	1.71
Vessel freight	.30
Duty	.50
Dockage	.50
	$5.01

Assuming a cost of half a cent a ton mile for transporting the coal O. C. S. (On Company Service), the following would be the price at Winnipeg:

American coal at head of lakes	$4.70	$5.00
440 miles to Winnipeg at ½c. per ton mile	2.20	2.20
Cost at Winnipeg	$6.90	$7.20

As against this, assuming a mine price of $3.50 for Alberta coal the following would be the cost:

Price at mine	$3.50
Average of 900 miles to Winnipeg at ½c. per ton mile	4.50
Cost at Winnipeg	$8.00

Subject to variations in the mileage and in the price charged at the various mines, the above will show, as stated, that, on an individual shipment, the point of equal cost would lie somewhere west of Winnipeg. Moving westward, naturally, the transportation cost from the Alberta mines becomes less and from the head of the lakes becomes greater until the point of equality is reached. On the other hand, by giving Alberta operators increased business, a lower price can be secured on the total supply, including that for the territory into which American coal could

not penetrate on a strictly price basis. The saving on the tonnage in that territory goes to offset the increased cost in the other territory. In the price paid for American coal, the cost at the mine and the freight to lake ports are monies spent out of Canada. The price paid for Alberta coal and the entire cost of transporting it are monies spent in Canada, in territory tributary to the railways themselves. The saving on their whole fuel bill and the general advantage of building up business in Western Canada are the elements which the railways consider in arriving at the general policy above described. As already stated, the recent reduction in wages has had a most important bearing on enabling the Alberta operators to quote prices that would secure them the extra railway market. The full effect of that reduction has not yet been felt because of the complication of orders placed with other mines and of the amount of coal in storage.

It is evident that the cost to the railway of transporting O. C. S. coal becomes a very important factor in reaching a decision as to the source of supply. All the arguments that have been put forward for ascertaining accurately the cost of a shipment to Ontario apply with equal force here. The Commission understands that one of the railway systems in the country is in the habit of adding the transportation costs on its own coal and considering the cost landed of each shipment. The other system omits this charge from both sides of the account but makes an investigation and calculation of the costs periodically, for the purpose of determining its fuel policy. In either case, the figures of costs thus used is important in a close decision as to how far Alberta coal can move eastward to meet American competition.

Seasonal Variations in Deliveries: The seasonal variations in the supply of railway coal are, from the point of view of the Alberta steam coal operator and mine workman, of the very gravest importance. A glance at the chart of coal shipments (Plate II.) will show the monthly variations in the deliveries to the railways. The year 1920, however, is comparatively uniform; 1921 shows decreases from January to April and increases again from July to December and is not extremely irregular. The years 1922 and 1924 have the big strike dips and immediately preceding the strike the peak of production in preparation for it. Following the termination of the 1924 strike, production was most disappointing, partly because of the huge stocks accumulated by the railways and partly because the price levels led them to purchase elsewhere.

The Commission believes that these seasonal variations in the supply of coal to the railways should be capable of fairly accurate forecast and some measure of regulation and that in this direction lies the chief hope of effecting important improvements in the position of the industry. Not one of the years, since the records have been kept and which form the basis for the chart, except to a certain extent the year 1925, has approached what the Commission is informed should be the normal con-

dition. Certain elements vary from year to year beyond control, such as the weather, the volume of the grain crop, etc. Subject to these, however, the general normal course of business would be for the railways to take from the mines in the four months January, February, March and April their current requirements. For the next four months, that is from the 1st May to the end of August, they would draw at least double the current requirements, putting half the coal into stock; for the next four months, September to December inclusive, they would draw only part of their current requirements and run mostly on stock; and, as seen above, these are the four months in which the current requirements in the grain-moving territory are roughly equivalent to the whole of the remaining eight months of the year.

The above which might be called the normal seasonal distribution in the matter of coal supply could and should be worked out in much greater detail. As discussed with the Commission, the policy of the two railways differs slightly in details. For example, the C. P. R. would, generally speaking, take from the mines for January, February, March and April their current requirements except for the Manitoba district; for May, June, July and August the current requirements for all western lines plus eight months' supply of stock coal for Manitoba; for September, October, November and December, like the first four months of the year, the current requirements for all except the Manitoba district. The C. N. R., on the other hand, generally speaking, would, in the first four months, draw current requirements; for the next four months double current requirements, putting half the coal in stock; and the remaining four months, for the Province of Alberta and part of Saskatchewan close to the boundary, they would continue to draw currently from the mines; but for the rest of the territory they would run mostly on stock. That is, from May to September they expect to put in the requirements for the balance of the year for all except Alberta and a small part of Saskatchewan, allowing for a certain reserve in addition to the emergency stock.

Besides the element of the heavy grain trade, there is the fact that winter transportation costs are high. The railways, accordingly, prefer to move their coal in the summertime. There is also the other fact that coal cannot be stocked so well until the snow is off the ground. Naturally, there will be all sorts of variations in any general programme. For example, last year a heavy grain movement started in very early and the railways had to stop taking from the mines and use from storage. Later, when the weather interfered with threshing and grain loading suddenly fell off, shipments were again resumed from the mines.

Balanced Traffic: Another element in the problem is that of securing a balanced traffic. Perhaps there is less tendency now than formerly to emphasize this feature, it having been found that wheat cars used exclusively as such circulate more rapidly and that speed is better than to attempt to get a return load. However, for the four months of the heavy grain movement,

American coal comes back from the lake ports in the grain empties, without interfering with the grain movement, because the cars are unloaded at Winnipeg. What interferes with the extension westward of this return haul system is that the cars loaded with coal are kept out of use for so long, if they are consigned to interior points; but, as far as Winnipeg, the advantages of this return haul are at present so great that, for the four months in question, it interferes with Alberta coal going to the Winnipeg market.

Regulation of Deliveries: Both railways expressed the greatest willingness to co-operate in systematizing deliveries with its important bearing on the employment of mine workmen. As will be discussed elsewhere in this report (Chapter VII., Sec. 48, suggested remedies for irregular employment), it seems to the Commission that there are great possibilities in this direction, in the way of releasing mine workmen at certain times for work in the harvest fields and, particularly, for work in the lignite mines in the province, where the normal seasonal distribution shows a precisely contrary tendency. To repeat, no more important step can be taken in solving the problems of the coal industry in Alberta, as it affects the steam coal mines, than to have the parties get together well in advance and work out as accurately as possible this whole problem of distribution of supplies.

Duty: The Commission investigated the effect of the recent change in the duty on bituminous coal. Formerly, the duty was 14c. a ton on slack coal and 53c. a ton on other coal. It appears the change to a flat rate of 50c. a ton on all bituminous coal has, on the whole, meant a reduction in the duty paid by the railways, that is a reduction in the protection enjoyed by Alberta mines. The railways formerly brought in relatively very small quantities of slack coal which took the lower duty.

Westbound Grain Movement: The Commission also inquired into the effect of a further development of the westbound grain movement and believes that such a development might have the result of increasing current coal deliveries from the mines and reducing the stocking of coal. There would be a tendency to have the mine mouth take the place of the storage at the lake head and load coal into the returning grain cars up to the dividing point of the grain movement. That is to say, by allowing a car to stop off at the mine long enough to load, the cost of storage would be saved. As against this, however, there would probably be a reduction in the total consumption of coal, because of the use through the mountains and on the Pacific Coast of oil and coal from B. C. mines. That is, instead of grain being carried to the head of the lakes by Alberta coal it would to some extent be moved westward by other coal and by oil.

Storage: A word should be added as to the general conditions governing storage of coal by railways. The expense of putting coal in and out of stock becomes an important factor in the determination of which coal to use. American coal need not be stored at Winnipeg, because it is so close to the big stock at the

head of the lakes and coal can largely be brought in as needed. Moreover, it is three or four times more expensive to take up coal from the ordinary stock pile than from the storage at the head of the lakes, which is handled very cheaply by machinery. In addition to the expense of providing storage space, the railways figure that it costs about 35c. a ton additional for putting coal in and out of stock and there is always some loss in the process. This does not take into account interest on the money invested in the coal. As against this, coal can be reloaded at Fort William or Port Arthur for about 4c. a ton.

Prospects: Generally speaking, the Alberta mines enjoy a larger railway market then ever in the past, the full effect of which will be felt only during 1926 and the ensuing years. The exact Eastern limit at the present time seems to be the supplying of the Winnipeg terminals, including coal put on the engines running east out of Winnipeg. The supplying of the Winnipeg terminals with Alberta coal all the year around has, in the case of one of the railways, been a matter of very recent decision and, when fully effective, will add about 75,000 tons of new business for the Alberta mines. The real dividing line will then be half way between Winnipeg and the first coaling station east of that on the respective railways. The exact figures were not obtained from both railways but the amount of American coal that will come in for use west of Port Arthur and Fort William, when the above arrangement is working normally, would probably be between 600,000 and 800,000 tons a year. To capture this market becomes increasingly difficult as the distance from the Alberta mines increases, coupled with the problems of storage above referred to. It must not be forgotten that to take coal farther east than Winnipeg involves much additional expense of stocking in the summertime. It is impossible to estimate very closely what reduction in price would be required to win this additional market for the Alberta mines but, under present conditions and at a rough guess, it would appear that something like $1.00 a ton off the price would be necessary. However, less than this might capture part of it, taking into consideration the saving to the railways on the rest of the territory. Owing to the relatively small consumption now available east of Winnipeg, the railways have little left to trade with the operators for such a further reduction in the price.

On the west, the C. P. R. uses Alberta coal as far as Kamloops, with the exception of the section of the line from Field to Revelstoke which uses oil. Alberta coal is also used on the Arrow Lake and Okanagan Lake steamers. The coal from the Crowsnest mines goes west as far as the Alberta boundary and in some years and to some extent a little beyond that. The C. N. R., likewise, uses Alberta coal as far as Kamloops where it meets the Vancouver Island coal. Because the B. C. coal mines have their own claim for consideration and because of their position to supply a suitable product at a suitable price and because of the use of oil through the mountain sections, the Commission can see no present prospect of any considerable extension westward for Alberta coal on the railways.

Leaving out of account the sub-bituminous stripping pits, the present capacity of the bituminous mines of the province, as reported to the Commission, may safely be put at 20,000 tons per day. On the basis of only 200 days' operation, this would give an output of 4,000,000 tons per annum, a minimum figure which will be seen to be well in excess of the requirements for railway fuel, even taking into account the increases now in prospect. Moreover, the capacity of the present mines is capable of expansion; so that the ability to supply the fuel is not a limiting factor in the railway market. One witness expressed the opinion that the railways could depend on the present Alberta mines for double the tonnage now being purchased.

Railway Mines: Despite rumors to the contrary, the Commission has been informed by officials that neither of the railway systems has any interest in any western steam coal mines. Both railways have an interest in or own mines in the United States and in ordinary times draw a great deal of their American coal from these mines. At the present time, one of the railways, because its mines are in a highly unionized district in Ohio, has been able to buy much cheaper coal elsewhere and their own mines are, therefore, not operating. The American mines of this railway have an estimated annual production of close to 2,000,000 tons and, for each of the years 1923 and 1924 the railway drew from them in the neighborhood of 1,300,000 tons, most of which, of course, was used elsewhere than in Western Canada. The fact that Canadian railways, in order to protect themselves, have acquired interests in American coal mines is not, in the opinion of this Commission, a factor of any importance in relation to securing the greatest possible railway market for Alberta coal.

Station Coal: The above discussion treats of the market for locomotive fuel. In addition, the railways use station coal. The C. N. R. for this purpose uses Alberta coal exclusively in the Western Region, that is from Armstrong, Ontario, right into Vancouver City. Since 1917, the C. P. R. has, also, used exclusively Canadian coal on its Western lines, Alberta coal supplying the territory between Fort William and Revelstoke. This station coal is taken from the 1st May to about the end of September according to a regular schedule of dates at the various points. It is thus practically all summer business and is most desirable from the point of view of balancing the operations of the Alberta coal industry. The total annual consumption of such coal (mainly sub-bituminous and lignite) on both railways is, probably, in the neighborhood of 150,000 tons a year and includes lump, stove and slack coal for stations, tanks, stationary boilers, etc.

4. Market in Alberta

The yearly sales within the province of Alberta itself of all three kinds of coal—bituminous, sub-bituminous and lignite—are shown by Appendix VI. and the sales month by month by the chart of coal sales (Plate II.). As already explained, up to the end of the year 1919, sales in Alberta are not separated from the sales to railways. An examination of Plate II. will show for

the years 1920-1925 fairly uniform seasonal variations. Every year shows a marked summer depression and a winter peak. In every year, the sales in the highest month are approximately three times those of the lowest month. In each year, May, June and July are the lowest months but the winter peak is more irregular, depending on the weather and the way in which the coal trade took its supplies in the year in question.

The general course of the Alberta market will appear more clearly from the following statistics showing total sales in each year:

TABLE 80—*Shipments by Alberta mines for consumption in Alberta.*

Year	Bituminous	Sub-Bituminous	Lignite	Total
1920	266,225	.....	1,370,585	1,636,810
1921	209,934	.....	1,199,802	1,409,736
1922	110,782	86,974	1,243,996	1,441,752
1923	105,113	54,825	1,222,848	1,382,786
1924	70,937	73,362	1,286,994	1,431,293
1925	90,207	63,983	1,285,842	1,440,032

Sub-bituminous coal was not shown separately until 1922. The total has been quite uniform but there have been variations in the kind of coal due partly to strike conditions.

The Commission has made no attempt to divide the market in the province of Alberta or to ascertain the consumption at individual points; because, being appointed to investigate the coal industry of the province as a whole, it is a matter of comparative indifference which particular mines supply the home market. A study of Appendix VI. will show the marketings in Alberta of each kind of coal and from each division in the province. In a normal year like 1923, which was not affected by strike conditions, the Edmonton Division comes first in supplying the home market, followed in order by Drumheller, Lethbridge, Crowsnest Pass and Tofield, with the remaining divisions more or less on a parity in this respect.

The competition in the home market between union and non-union mines and between shipping and wagon mines will be discussed elsewhere in the report. While the total output of the wagon mines is small, it undoubtedly has a disturbing effect on the market. One witness declared that, from the point of view of the regular trade, the Alberta market was getting spottier every year. The same witness stated that the extent to which these small wagon mines competed for the trade depended on general conditions. When crops were good, farmers had no time to go to the local mine and bought more coal from the regular dealers; in a poor season anyone within a distance of 50 miles would go to one of the wagon mines and haul his own coal.

Competition: It may be stated broadly that there are no imports of coal into the province of Alberta of sufficient size to create competition or disturb the market. In the year 1923, B. C. mines shipped 18,054 tons into this province. The Saskatchewan mines, which in the previous year had sent a little coal, for the year 1923 reported no such shipments. There is

also very little competition from coke, which is such a factor in the market elsewhere. Here there is very little opportunity for it; because there are mines close to the centres of consumption in addition to which there is the competition from natural gas. Natural gas and hydro-electric competition will be treated in separate sections later in this chapter.

A general feature of the home market has been the rise in value of lignite slack. This has come about through its use for steam-raising purposes and it has replaced bituminous mine run coal to some extent for these purposes. Witnesses told the Commission that the cost of such coal to them had risen from 25c. a ton in 1922 up to $1.00, $1.25 or even $1.50 a ton in 1924 and 1925.

Prospects: The improvement in the home market will come about chiefly through increased population and increased industrial activity. Several witnesses, however, declared that a cheaper price for the coal would increase even the local consumption to a material extent.

5. Market in Saskatchewan

Historical: An examination of the chart of coal sales by months as given in Plate II. will show that the Saskatchewan market is even more highly seasonal than the Alberta market. It is noticeable, too, that this market is much more affected by the strike gaps such as those of 1922 and 1924. There is much greater disparity between the winter peak and the low point of the summer consumption. Even in a non-strike year such as 1923, the highest winter month is about seven times the lowest summer month. Unlike the comparative regularity of the Alberta market, no two years in the Saskatchewan market show anything like the same record.

The general trend of that market will be shown by the following table of the sales of all Alberta coal in Saskatchewan for the years for which such figures are available:

TABLE 81—*Shipments of Alberta mines for consumption in Saskatchewan.*

Year	Bituminous	Sub-Bituminous	Lignite	Total
1917	174,687	.....	959,450	1,134,137
1918	273,195	.....	1,091,544	1,364,739
1919	245,714	.....	865,698	1,111,412
1920	171,209	.....	1,134,416	1,305,625
1921	284,015?	.....	1,007,188	?1,291,203
1922	214,269?	51,338	1,104,846	?1,370,453
1923	69,965	28,541	1,124,948	1,223,454
1924	50,749	54,639	1,084,400	1,189,788
1925	55,600	63,159	1,178,894	1,297,653

The figures for 1921 and 1922 are queried because as explained in connection with Table 77 they evidently include large shipments to railways, at least 170,000 tons in 1921 and 150,000 tons in 1922.

Total Consumption: The Commission found it impossible to get any accurate figures of total consumption of coal in the prov-

ince of Saskatchewan. As already pointed out the imports from the U. S. are entered at lake head ports without any available information as to their ultimate destination. The imports direct into the province of Saskatchewan from the U. S. are insignificant and not worth recording. The shipments of coal from Saskatchewan mines for consumption within the province of Saskatchewan are given as follows:

1922	177,743 short tons
1923	172,774 short tons

General Conditions: The following summary of market conditions in the province of Saskatchewan was given to the Commission by witnesses in a position to know the facts. For steam purposes, Southern Saskatchewan uses its own Souris coal at points close to mines, where the cost at mine plus freight gives that coal a decided advantage over any price that can be quoted by Alberta mines. Elsewhere in Southern Saskatchewan, coal for steam purposes is supplied by Alberta bituminous mines. For Central and Northern Saskatchewan, coal for steam purposes is chiefly supplied by the Drumheller field. For domestic purposes, it was estimated by these same witnesses that probably 90 per cent was Alberta coal and the other 10 per cent Souris.

Competition: The chief competition, then, in the Saskatchewan market is from the lignite coals mined in that province, the cheapness of mining and transportation to market going to offset their inferior quality. Witnesses differed somewhat as to the amount of American anthracite that is still going to the province of Saskatchewan; but the general belief is that even the confirmed users of hard coal are getting educated away from it and that such users are becoming fewer every year. All Saskatchewan is thought to afford a slightly better market for coke but the extent of competition from that source is at present not serious.

Prospects: As to the prospects in Saskatchewan, the chief hope lies in increased population and consumption in those parts of the province that are accessible for Alberta coals. There seems very little chance in the south-eastern corner of Saskatchewan of overcoming the competition of the Souris coal. In 1923, British Columbia shipped into Saskatchewan 31,710 tons and there seems no reason why that share of the available orders should not have been captured by Alberta mines. On the whole, under normal conditions, the province of Saskatchewan should present a stable and growing market for the coals of this province.

6. Market in British Columbia

Historical: The chart of coal sales by months given as Plate II. shows the sales in British Columbia as a very minor factor in the total market. From 1917 to date, the outline is distinctly seasonal with a winter peak and summer depression. By years, the sales of Alberta coal in the province of British Columbia, as given by the Mines Branch Reports, have been as follows:

TABLE 82—*Shipments of Alberta mines for consumption in British Columbia.*

Year	Bituminous	Sub-Bituminous	Lignite	Total
1917	54,035	.....	18,798	72,833
1918	69,163	.....	26,849	96,012
1919	57,267	.....	33,111	90,378
1920	69,675	.....	54,116	123,791
1921	61,710	.....	51,904	113,614
1922	22,427	14,564	69,701	106,692
1923	23,344	14,351	70,631	108,326
1924	26,292	11,599	76,295	114,186
1925	33,509	13,326	68,202	115,037

Total Consumption: To give some idea of the total consumption of coal in B. C. outside of the railways, certain figures will be of interest. The shipments of coal from B. C. mines for consumption in B. C. itself are given as follows:

1922.....954,681 short tons
1923.....805,839 " "

The imports of coal into B. C. are given as follows:

From the United States: 1921.....17,332 tons
1922.....13,497 "
1923.....20,423 "
From Other Countries: 1922..... 1,730 "
1923..... 1 "

The figures given above show the imports into British Columbia from Alberta. Bunker coal is given separately below.

Bunkering: Coal mined in B. C. was used on steamships as follows:

British Columbia Coal for Bunkers—1922.....317,148 tons
1923.....341,847 "

What are the prospects of Alberta coal securing any share of this trade? Several of the witnesses who appeared before the Commission thought that there was a big potential market in this direction, especially as shipments of grain from the Pacific coast increase. The Commission therefore has examined this question carefully. The factors in favor of Alberta coal are that it can possibly be mined from 50c. to 70c. a ton cheaper than the Island coals and, in one practical test of 400 tons, the captain of the steamer reported that he found the Alberta coal about 10 per cent more efficient. Other smaller tests have proved Alberta coal to be satisfactory. The factors against the use of Alberta coal are the freight rates to the coast, the lowest of which is $3.90 per ton, and the absence of any bunkering facilities available to Alberta shippers. Alberta mine run coal would have to compete with Island coal which has been screened to take out slack and pea sizes, these sizes being sold locally. It would not be practicable to screen Alberta coal in the same way. There are excellent bunkering facilities now available at Nanaimo, Ladysmith and Union Bay. Such facilities are very costly to provide. However, if the handicap of freight rate can in some way be overcome and if sufficient business were in prospect, the Dominion Government might be expected to erect bunkering facilities at Prince Rupert, for example, where the competition from Island coals would be less severe.

The practical difficulty, apart from the question of cost landed, lies in the fact that there is a sentiment now in favor of Island coal which must be overcome; and this can only be done by tests on a large scale, which will be very expensive without bunkering facilities. On the other hand, it is rather too much to expect these to be provided until it has been proved that both the coal and the price will be acceptable to the trade.

Looking further into the future, the life of the Vancouver Island coal field can probably be estimated. The Commission is informed that the whole Island has been thoroughly prospected by diamond drills and otherwise and that there has been little new development in the last twenty years. British coal has, in the past, been brought in only occasionally as ballast or as smokeless Welsh coal for Admiralty use; although the Island coal would have been cheaper. The good coal in Alaska and the Yukon lies inland. Some Chinese and Japanese coal is being used for bunkering notably on the Dollar Line but it is of inferior quality. It has just been announced that bunkerage will be provided at North Vancouver accessible to both railways. This is of considerable interest to Alberta operators provided some concessions can be secured in freight rates although the competition at Vancouver from various British Columbia coals will be severe.

In time and as the port of Prince Rupert develops, there should be a bunker market there for the coal from bituminous mines west of Edmonton. If a trade in grain or other commodities is established on the short route to the Orient via Prince Rupert, the steamers engaged in this trade will require bunker coal. Just as soon as it appears that Alberta operators can compete successfully for this bunker trade, an appeal must be made to the harbor authorities to provide facilities at Prince Rupert.

Steam Market: At points in the interior where Alberta mines enjoy equal or more favorable freight rates this province can hope to obtain whatever steam business now exists or may develop. In Vancouver however the competition from British Columbia mines is very severe. The freight rate from the Alberta Coal Branch to Vancouver is $3.90 a ton with 20c. switching charge from the C. N. R. to the C. P. R. The rate from the Alberta Crowsnest mines to Vancouver is now $4.40 a ton. As against these rates coal from certain British Columbia mines can be landed in Vancouver for less than $1.00 a ton. While therefore Alberta operators have lower mining costs the prospects of the steam market in Vancouver are not bright.

Domestic Market: As will be seen from the table given above, the shipments of lignite coal into British Columbia up to the end of 1924 showed a fairly steady increase reaching a total for 1924 of over 76,000 tons. The shipments of sub-bituminous coal have been in the neighborhood of 14,000 tons a year. It was the opinion of witnesses, who appeared before the Commission, that the B. C. market was capable of expansion to something like 150,000 tons for domestic use. The market would be

all the way to Vancouver on the C. P. R. and C. N. R. main lines and to Prince Rupert on the C. N. R.

Competition: In this domestic market, the competition is with coals from Vancouver Island, Nicola Valley and the State of Washington. Certain well-informed witnesses realized that the Vancouver market itself, which is the big market, could only be captured with some difficulty. The Alberta lignites, as is amply proved by experience here, form a more desirable coal for domestic use than the bituminous coals such as those of Vancouver Island, but, at present freight rates, the difficulty is to bring the price to the competing point.

In November, the cost and selling price of Island coal in Vancouver was given to the Commission as follows:

Cost at mine per long ton	$7.25
Insurance and harbor dues	.10
Towing	.60
Total f.o.b. dock, Vancouver	$7.95
The equivalent per ton of 2,000 lbs. is	$7.10
Sacking	.35
Delivery	1.35
Loss on 10% slack	.70
	$9.50
Gross profit	$2.00
Selling price delivered	$11.50

Another witness gave the following make-up of the cost of Island coal delivered in Vancouver:

Lump coal at mine	$7.25
Lighter	.50
Harbor Dues	.10
Insurance	.05
Unloading	.25
Yardage, screening and bagging	.60
Delivery, including wear and tear on wagons	1.50
	$10.25

In the summer time, the Island coal was selling retail for:

Double-screened lump	$11.00 a ton
Scow run lump	10.25 "
Nut coal	10.00 "

In the winter time in the past, the prices for Island coal have gone to $12.50 for lump and $12.00 for nut.

The lignites from the State of Washington were selling last summer:

Double-screened lump	$10.00 a ton
Egg	9.00 "

Formerly, these Washington coals were sold as bituminous and paid a 50c. duty; but now that they are entered as lignite there is no duty to pay and the prices of the Island coals were dropped to meet this lignite competition.

Vancouver gas coke for domestic use is sold at $11.00 a ton delivered and there is some Fernie coke sold at $10.50 a ton in

three or four ton lots. The Gas Company also makes briquettes of coke breeze and pitch which sell at $12.00 a ton.

Prospects: In the opinion of the Commission, there are good prospects for the expansion of the B. C. domestic market for Alberta coals. It will take energy and, if possible, concerted action on the part of Alberta operators to win that market against the natural reluctance to change and against the established business connections; but the prize is worth striving for. As the business develops, the railways should be expected to co-operate by granting some concessions on the present freight rates. They have a common interest in developing business which means a comparatively long haul for them.

7. Market in the United States

The chart of coal sales given as Plate II shows, in graphic form by months, the sales in the United States since the year 1917. The outline is too irregular for any general deductions to be drawn from it. By years, the sales of Alberta coal in the U. S. as given by the Mines Branch Reports have been as follows:

TABLE 83—*Shipments from Alberta Mines for Consumption in the United States.*

Year	Bituminous	Sub-Bituminous	Lignite	Total
1917	90,337	.....	2,473	92,810
1918	130,082	.....	3,154	133,236
1919	114,409	.....	6,696	121,105
1920	115,415	.....	37,893	153,308
1921	100,330	.....	33,085	133,415
1922	86,640	351	18,453	105,444
1923	62,254	122	21,181	83,557
1924	26,777	63	12,302	39,142
1925	23,123	34	17,350	40,507

The sales of bituminous coal show a considerable falling off from the peak in 1918 (130,082 tons) and are chiefly responsible for the general decline in the business. The peak of the lignite sales was in 1920 at 37,893 tons. The sales of sub-bituminous coal have been a negligible quantity up to the present. The bituminous peak of 1918 was due to war conditions. The gradual decline in shipments of bituminous coal since then can only be ascribed to successful competition of other coal and other fuels, accentuated particularly by the 1924 strike.

Seattle Market: The Commission is not able to agree with the view put forward by some witnesses that there is a big potential market for Alberta coal in the city of Seattle. So far as steam coals are concerned, the mines at Fernie have the advantage in nearness to this market. A new mine is reported as having been opened up producing coal with about 13,000 B.T.U.'s and with an 80c. freight rate into Seattle. The rates from Alberta Coal Branch to Seattle via Sapperton were as follows:

Coalspur to Sapperton	$3.90
Sapperton to Seattle	2.15
	$6.05

Recently a reduction was sought to the following:

Coalspur to Sapperton	$3.70
Sapperton to Seattle	1.60
	$5.30

One witness, however, reported the dealers in Seattle a saying that the most they could pay for freight was $4.75 an that, even if the above reduction to $5.30 were put into effe and resulted in any considerable movement, the coal dealers o Rock Springs, Wyoming; Castlegate and Sunnyside, Utah, migh be expected to go to the Interstate Commerce Commission for reduction in rates to meet the competition. One well-informe witness gave it as his conclusion that it would be economical t forget the Seattle market. Alberta mines have in the pas shipped an odd car or two to this market but, as stated abov the Commission can see no prospect of its developing on an considerable scale.

Spokane Market: One operator in the Drumheller field, wh was a witness before the Commission, was quite hopeful as t the prospects for Alberta lignite coal in the Spokane marke With a freight rate of $4.50 a ton and no duty, he though that market was just as open to their coal as the Winnipe market and that the competition would not be any worse. Th prejudice to be overcome would perhaps be a little greater. Uta and Wyoming coals were selling for approximately the sam price as they could now sell Drumheller coal but these coal while they had higher heat units, were less satisfactory to th consumer. At the above freight rate, the coal could be lai down at Spokane for 20c. a ton less than in Winnipeg and wa retailed at the Winnipeg prices. Some other witnesses share this view. On the other hand, another witness thought tha while they would ship some coal to the Spokane market h would not expect a great deal from it. Spokane was even mor of a dumping ground than Winnipeg, competing coals comin from the Roslyn field in central Washington and from Wyoming Montana, Utah and British Columbia.

The Commission has been furnished with price lists of vari ous Utah coals in the Spokane market. These were coals wit about 13,000 B.T.U.'s and lump coal over a 3-inch screen i laid down as follows:

Cost at mine	$4.25 a ton
Freight to Spokane	4.51
To dealer f.o.b. car, Spokane	$8.76

The Commission is further informed that the coal dealer in Spokane, of whom there are only about thirty, have a very strong association and up to the present have not been favorable to the introduction of Alberta coal in large quantities into tha market. These difficulties are recorded to show that it wil take a struggle to capture any considerable share of the Spokan

market; but certain Alberta operators are making a very special effort in that direction at the present time.

Northern Montana Market: The evidence with regard to the possibilities in this market also is conflicting. In 1910 or 1911, before statistics were kept in their present form, Alberta coal enjoyed a considerable market in northern Montana due largely to a through freight rate from Lethbridge to Great Falls of about $2.50 a ton, as against the present freight rate in the neighborhood of $4.00 a ton. One witness, who was impressed with the possibilities of this market, thought that, if something could be done to reduce the freight rate, Alberta coal should have no difficulty in meeting the competition of southwestern Montana and Wyoming coals and that this offers one of the best opportunities at the present time for enlarging Alberta's market. Other witnesses, however, were much less hopeful. They thought there was no possibility of securing freight reductions from the American railroads to allow Alberta coal into that market. The trade which Alberta enjoyed was before the building of the Burlington Railroad, making with the Great Northern Railroad a connection between southern and northern Montana and bringing in coal from southern Montana, with which these witnesses did not think Alberta coal could compete, owing to the cost of the coal itself plus the freight rate. Efforts had been made to get a joint freight rate and the matter had been taken up before the Montana Railway Commission who declined to make the necessary order. On the whole, therefore, the weight of evidence is against the prospect of expansion of the market in this direction.

North Dakota Market: This territory, likewise, offers a big potential market and it becomes a question of cost of coal and freight rates as to what share Alberta can hope to get of it. The Commission has gone quite fully into the comparative prices of coals from eastern United States via the Great Lakes and of the local North Dakota lignite, as compared with the prices at which Alberta coal can be laid down at various typical points. On its suitability for domestic purposes, this market is taking a certain quantity of Alberta coal, especially of the smaller sizes, and would probably absorb a much larger quantity of these sizes if it were available. Alberta lump coal can hardly expect to get into the market under ordinary conditions, as the following comparison will show:

Kentucky lump coal, price f.o.b. docks at Duluth	$6.00	a ton
Freight to Fessenden, N. Dakota	3.58	" "
	$9.58	" "

as against

Alberta lump coal at Lethbridge	$5.50	a ton
Freight to Fessenden, N. Dakota	5.80	" "
	$11.30	" "

North Dakota lignite is laid down in Fessenden at $3.65 a ton. Just at present, owing to the strike conditions in the United States, prices of American coal at the docks have gone up. It was the opinion of one witness that with a substantial reduction in the freight rate and a reduction in the mine price of at least $1.00 a ton there might be some hope of getting into the market with lump coal. It should be noted that this market would be seasonal in the same way as the regular markets for Alberta coal. The competition would be so keen that Alberta coal would not stand the expense of storing during the off season.

8. Market in Manitoba

Historical: The chart of coal sales (Plate II) shows, by months since 1917, the shipments from Alberta mines for consumption in the province of Manitoba. With the exception of the year 1918, the outline shows winter peaks and summer depressions with well-marked strike gaps in 1919, 1922 and 1924. The yearly figures are as follows:

TABLE 84—*Shipments from Alberta Mines for Consumption in Manitoba.*

Year	Bituminous	Sub-Bituminous	Lignite	Total
1917	99,039	.....	150,510	249,549
1918	120,132	.....	387,728	507,860
1919	41,647	.....	270,437	312,084
1920	143,202	.....	456,404	599,606
1921	86,548	.....	408,456	495,004
1922	21,053	62,982	436,473	520,508
1923	10,025	60,431	483,183	553,639
1924	5,453	61,805	443,149	510,407
1925	18,226	83,835	407,594	509,655

Starting with total shipments of 250,000 tons in the year 1917, the amount was more than doubled in 1918. There was then a reaction in 1919, due in part to the strike. The peak total was reached in 1920, at just under 600,000 tons, since when there has been a somewhat irregular decline to 510,000 tons in 1925. These changes and their causes will be discussed in greater detail under the two headings "Steam Market" and "Domestic Market."

(*a*) *Steam Market in Manitoba*

Total Steam Market: As pointed out under the railway market, the figures for American imports into western Canada do not indicate the destination of the coal and so cannot be used to give an idea of the total available market in Manitoba for steam purposes. The total steam market was estimated by witnesses anywhere from 300,000 to 500,000 tons per annum, with the weight of evidence in favor of the lower figure and with an estimate for Winnipeg alone of 200,000 tons per annum. It would be well to have the Provincial Coal Office in Winnipeg compile accurate figures for the total market for the information of Alberta operators.

Alberta's Share of the Steam Market: Alberta's participation is indicated by the shipments given at the head of this section.

Broadly speaking, all of the bituminous coal and some of the small sizes of the sub-bituminous and lignite coals supply the steam market, the rest of the sub-bituminous and lignite coal going to the domestic trade, which will be discussed next. Starting with 100,000 tons in 1917, the shipments of bituminous coal increased to 120,000 in 1918 and were then cut by the strike of 1919 to 40,000. The peak was reached in 1920 with 143,000 tons. The apparent sharp drop in 1922 however is due to the separation of the sub-bituminous coal which previously was included as bituminous in the returns. In 1923 the bituminous coal was 10,000 tons and in 1924 it had dwindled to 5,453 tons. 1925 has seen a slight revival in the trade to a little over 18,000 tons. At the peak, one witness stated that Alberta supplied about 50 per cent of the steam market while another witness put it at 40 per cent. These, of course, were only estimates but, coupled with the actual figure shipped in 1920, would correspond with a total market in the neighborhood of 300,000 tons. For the year 1925, therefore, Alberta, including bituminous and small sizes of sub-bituminous and lignite coals, probably supplied less than 10 per cent of the market.

The peak of 1920 was due to a severe coal car shortage in the United States, which put up the price of American coal and gave Alberta the market. According to some of the evidence, the best use was not made of this opportunity in that certain dealers took advantage of the situation to charge a bigger margin of profit and also were not careful enough with the quality of the coal supplied. The result of this was that the consumers were not satisfied and were ready to revert to American coal, when the price of that coal was again reduced. It should be noted that the steam coal market of Manitoba is a seasonal one, the coal being used mainly for heating purposes in the winter-time.

Competition in the Steam Market: The Commission is indebted to Mr. George R. Pratt, the Alberta Government Fuel Engineer at Winnipeg, for information as to the Winnipeg market for Alberta coal both steam and domestic. The information supplied by Mr. Pratt has been combined with evidence from other sources. The Manitoba market is changing very rapidly, and it is difficult to present an account that is completely up to date either as to sources of supply or prices. This difficulty must be kept in mind in what follows.

The Winnipeg steam market is supplied for the most part by American coal, imported through Duluth or through Fort William and Port Arthur and to some extent all rail via Minneapolis. In addition, the Saskatchewan field supplies lignite for steam-raising purposes. Cordwood is used as well as a little oil fuel and there is very cheap hydro-electric energy for power purposes. A certain amount of British Columbia coal goes to Manitoba, the shipments to that province being given in 1922 as 9,280 tons and in 1923 as 12,387 tons, which is actually more than the Alberta shipments of bituminous coal the same year.

The prices of American coal at the beginning of the 1925-26 season, when contracts were being made, were given to the Commission as follows:

Pocahontas	Mine Run Per Ton	Slack Per Ton
At docks	$5.05	$4.20
Duty	.50	.50
Freight to Winnipeg	3.30	3.30
Cost to dealer f.o.b. Winnipeg	$8.85	$8.00

(Another witness gave the cost of Pocahontas slack in May 1925 as $7.44 a ton to the dealer.)

Youghioghenny	Mine Run Per Ton	Slack Per Ton
At docks	$5.05	$3.95
Duty	.50	.50
Freight to Winnipeg	3.30	3.30
Cost to dealer f.o.b. Winnipeg	$8.85	$7.75

(In May 1925 the cost to the dealer of Youghioghenny slack was given as $7.04 a ton.)

These coals were being sold delivered to small heating plants at $11.00 a ton and on large contracts at anything from $8.50 a ton up. At the same time, various Alberta bituminous coals were on sale to small plants at $10.00 for run of mine with prices ranging from $8.50 to $10.00 a ton on larger contracts.

Prospects: The City of Winnipeg Hydro-Electric System is now burning an Alberta steam coal in powdered form, the contract having been secured in competition with American coals; and the manager reports it extremely satisfactory. Like the experience on the railways, the introduction of Alberta coal involves some difficulties with firemen who have to become accustomed to a different fuel. This feature of the situation will be referred to again in discussing the Provincial Coal Office at Winnipeg. Meantime all witnesses agreed that to overcome this initial handicap there should be a differential in favor of Alberta coal, which was variously put at from 50c. to $1.00 a ton. To take the lower figure, Alberta coal should be landed in Winnipeg at least 50c. a ton lower than the American bituminous coals. There is no lack of supply of American coal; but it is not thought that, even in a normal year, such coal can be laid down in Winnipeg at much if any below the above prices. The problem is to get the Alberta coal there in large quantities at least 50c. a ton cheaper than similar grades of American coal. One well-informed witness stated that, as soon as the heat value of the coal dropped to 11,000 B.T.U.'s or less, the freight handicap would exclude Alberta coal. On the contrary, for the coals from 12,000 to 13,000 B.T.U.'s, a decrease in the freight rate of $1.00 a ton would give the entire market to Alberta, to the exclusion of all American coal for steam power production. Before summing up the general situation it will be well to discuss the other market in Manitoba.

(*b*) *Domestic Market in Manitoba*

Total Domestic Market: In an attempt to estimate the total available domestic market in the Province of Manitoba, one is met by the same difficulty in respect to the destination of imports of American coal. Assuming that the bulk of the anthracite imported at the head of the lakes is consumed in Manitoba, in addition to what anthracite is entered as imported direct into that province, and considering the shipments of Alberta lignite coal, part of the brown lignites shipped from Saskatchewan, some of the American bituminous imports, coke produced locally and imported, briquettes, etc., the total domestic market in Manitoba would appear to be from 600,000 to 800,000 tons per annum. An estimate made by Mr. Pratt for the Mines Report of 1923 gave Winnipeg alone for the heating season of 1922-23 as consuming 428,000 tons of coal and coke.

Alberta's Share of the Domestic Market: Alberta's participation in the domestic market is in the form of both lignite and sub-bituminous coals but part of each of these is also used for steam purposes. Looking for the moment only to the shipments of lignite coal, it will be seen that beginning in 1917 with 150,000 tons there was a tremendous increase in the year 1918 to 387,000 tons. The causes of this increase were the shortage of anthracite in the United States, the heavy adverse exchange against Canadian currency and, directly, the action of the Fuel Controller in limiting the anthracite to prospective purchasers to one-half of their total requirements. There was a reaction in 1919 due in part to the strike here. Owing to car shortage in the United States and the consequent increase in price and scarcity of American coal, there was the same increase in lignite coal shipments in 1920 which, combined with the peak of bituminous shipments, give the largest total ever sent by this province to Manitoba. However, the shipments of lignite coal held their own fairly steadily for the ensuing 5 years with a peak in 1923 of 483,000 tons. In 1925, however, for causes that will be discussed later the total again dropped to 407,594 tons or less than any year since 1919. On the other hand, the sub-bituminous shipments to Manitoba at 83,835 tons are the highest recorded since that class of coal has been shown separately. It should be noted that the domestic market in Manitoba is also highly seasonal with a winter peak and a summer drop.

Competition in the Domestic Market: The Manitoba domestic market is supplied by anthracite and bituminous coal from the United States, coke from the United States and produced locally, briquettes from the United States, cordwood, brown lignites from Saskatchewan and the various coals from Alberta. American anthracite which was originally the main fuel is now less of a factor. Owing to the strike in the anthracite mines, prices have now gone up sharply but it is reported that the Winnipeg dealers are maintaining the prices while the stocks bought before the strike are being used up. The cost of anthracite to the consumer at the beginning of the season was $19.50 a ton for egg, stove and nut sizes; pea, $16.50 a ton; buckwheat, $13.00 a ton.

Pocahontas lump coal has been scarce in Manitoba this season because it is being used in the United States to replace anthracite. It is reported that each dealer in Winnipeg is reserving what supply he has of this coal for his steady customers. The price at the beginning of the season ran from $11.50 to $14.00 delivered according to size. One witness told of a campaign some time ago to put into Winnipeg West Virginia splint coal containing 13,000 B.T.U.'s to be sold at $10.00 a ton but the coal was too smoky and dirty and the campaign was unsuccessful. Briquettes are also imported from the United States, the Berwind made of Pocahontas screenings with an asphalt binder which is reported as a very smoky and dirty fuel and the Stott briquette made of anthracite screenings with a pitch binder. These briquettes come from Duluth and Minneapolis, have a B.T.U. value of 12,500 to 14,000 and sell at $15.50 a ton. According to all reports, the most formidable competition comes from domestic coke. All witnesses were agreed on this although they differed widely as to the actual quantity of such coke imported from the United States, in addition to what is made locally, the estimates running from 60,000 to 100,000 tons or more for the season. When the retail price of such coke was dropped from $18.50 to $15.50 a ton, it became very serious competition. The price to dealers at the beginning of the present season was reported to be $12.50 f.o.b. Winnipeg for Twin City coke and $12.25 for Zenith coke from Duluth. In November these prices were increased to $13.80 and $13.50, respectively, but the Commission understands that the price to the consumer has been maintained by the dealers until their stocks are used up. One witness reported that the consumption of coke this season would be double last year's. A large firm expects by next summer to control all imported coke and thus avoid the cutting of prices and give the dealers just the protection that is needed to make it the most popular fuel with them. The Saskatchewan lignites with about 6,500 B.T.U.'s were quoted at $6.00 to $7.00 a ton for lump coal delivered to the consumer. Cordwood was selling at from $6.00 a cord for poplar to $8.50 a cord for tamarac, or cut up for $7.50 and $10.00 a cord, respectively.

As compared with these prices, at the beginning of the 1925-26 season, Alberta coals were quoted delivered to the consumer as follows:

Sub-bituminous—Lump, $13.00 to $14.50 a ton; stove, $12.50 to $14.00.

Lignite—Lump, $10.90 to $12.50; stove, $10.50 to $11.50; nut, $9.50.

Taking an example from Drumheller mines, the following comparison was given:

	1924-25	1925-26
Price at mine	$ 4.70	$ 3.95
Freight to Winnipeg	4.70	4.70
Cost to dealer	$ 9.40	$ 8.65
Selling price delivered to consumer	$12.50	$11.50

The Winnipeg market is thus highly competitive. No one fuel enjoys natural advantages and in the result it becomes a regular dumping ground. Alberta "distress coal" (that is, coal which has been refused at any other point) is sent through to Winnipeg. Much coal is also shipped without definite orders in the hope of catching a market. On the other hand, many witnesses referred to the practice of the American mines and dealers in dumping surplus stocks into Manitoba. This feature will be discussed later in connection with the anti-dumping regulations (Chapter VIII). A combination of these special features of the Winnipeg market has the effect of disrupting the trade and making it extremely difficult to do business. Combined with all this is the fact that, during the recent years of depression in building and other lines of business activity, there has been the same tendency noted elsewhere to crowd the field with retail dealers, resulting in the still greater demoralization of the market. A complication has recently arisen from an unexpected source in that one large concern, not previously in the coal business, entered it last year on the basis of delivering coal in sacks with no charge for the extra cost of this operation. The coal being sacked is, it is true, purchased from Alberta mines, but it creates difficult competition for other dealers in coals from this province.

Provincial Government Activities: A brief reference will now be made to the Alberta Government's activities, designed to assist the marketing of Alberta coal in Winnipeg and Manitoba generally. Full details of this work will be found in the numerous publications of the office there. These publications take the form of a series of "Coal Truths" pamphlets of which about twenty have appeared, some being leaflets and others being attractive booklets fully illustrated. As shown by the statistics published in this section, the 1918 influx of Alberta coal forced on the consumer by the action of the Fuel Controller was followed by a slight reaction. The coal required very different treatment from anthracite to get the best results and, naturally, it met the organized opposition of those who had established connections in the United States. The direct cause for the opening of the Government Office is given as the success which resulted from a demonstration maintained by one of the Winnipeg dealers. Accordingly, the Government determined on an educational campaign, appointed a Combustion Engineer and opened an office in 1920. About a year later, this work was undertaken by Mr. George R. Pratt by whom it has been carried on ever since with great ingenuity and zeal. In addition to the publications already referred to, which, besides general information, go into great detail in connection with the construction of furnaces of all sorts and the care of fires, the office has arranged lectures and demonstrations including direct instruction to firemen on the use of the coal and generally endeavored to keep the value of Alberta coal before the public. The cost to the province is given under the heading of "Extension of Coal Markets." which includes also expenses in connection with the Ontario

market, and this cost is stated by the public accounts a $24,826.52 for the year 1924.

Winnipeg Dealers' By-Law: The City of Winnipeg has mad an interesting attempt to control coal dealers by passing a by law. Very briefly, this by-law defines a coal dealer; provide for the licensing of coal dealers and that the delivery ticke shall show the name of the mine, district where it is situated, th grade of the coal, etc.; and contains provisions for the analyzin of samples to prove whether the coal is equal to the standar as shown by a list which is to be filed by the dealer with th Market Superintendent. The latest reports which have reache the Commission are to the effect that this by-law has been foun to require revision in certain particulars and no definite state ment can yet be made as to how effective it will be in regulatin the coal trade of the city. Mr. Pratt informed the Commissio of an attempt he was making to have reliable dealers use special form of advertising themselves; but the results of thi experiment have not yet been announced.

Special Conditions: It will be seen by Table 84 that the recen course of the Manitoba market has been somewhat disappointin For lignite coal alone, 1924 showed a drop of 8 per cent and 192 a further drop of 8 per cent. The chief cause was, undoubtedl the strike conditions in the mines of the province. The bi strike of 1924 was not settled until after dealers had made othe arrangements for a winter supply of fuel. Following the reduc tion of wages in 1925, there were a number of strikes and dis turbances, in the Drumheller field particularly, so that, in spit of the lower prices for coal, the dealers were once more fearfu as to the availability of Alberta coals and placed orders else where. The first cold weather in Manitoba produced busines in gratifying volume. The winter on the whole, however, whil not approaching the mildness enjoyed by Alberta, has been les severe than usual. The other supplies contracted for have natur ally been used first and the Alberta mines have gone short o orders. The decreases of the last two years therefore may b ascribed principally to the strike conditions coupled with a les severe winter in 1925-26.

Dealers' Difficulties: In addition to these major difficulties there is a whole range of minor ones which may be summed u as dealers' difficulties in the handling of Alberta coal. Th Commission heard a great deal about this in the course of it work. The matters complained of were the varying quality an state of preparation; confusion caused by a great number o competing coals offered at different prices; "distress coal"— coal which must be sold at any price no matter what the los to the owner of it (such coal arises from sending on to Winnipe cars that have been refused elsewhere and in particular from th practice of some operators of shipping without orders, hopin to find a buyer on arrival)—and the range in prices for even th same coal on the same day. This latter feature creates in th mind of the consumer the impression that all charging abov the lowest price are making an undue profit and, as a conse

quence, many dealers dislike handling a coal which presents such features tending to reflect on their reputation. Incidentally, in the present season, an experiment is being made in marketing one Alberta coal, without the intervention of the Winnipeg dealers; but this is a lone effort and is, therefore, on too small a scale to do more than add another disturbing factor from a provincial point of view, whatever be the result to the individual operator. The dealers could not be expected to welcome such an attempt to do without their services and naturally looked elsewhere for a supply of coal that would not come in competition with such selling direct to consumer.

Prospects: The Commission believes, then, that the recent rather disappointing results in the Manitoba domestic market have nothing to do with the quality of the coal itself but may be attributed to such extraneous matters as labor troubles and marketing methods. To maintain and improve Alberta's position in this particular market calls for the removal of the above causes so as to secure uniformity and reliability in the supply, the quality and preparaton, the price and the methods of marketing.

(*c*) *General Requirements for Extension of Manitoba Market*

To capture the bulk of the market in Manitoba both steam and domestic—a potential market at least twice as large as that now enjoyed—and to reduce the imports of American coal to a minimum will require, first, adequate protection against the dumping of American coal and coke. This matter is discussed more fully in the chapter on legislation (Chapter VIII) under the heading "Dominion Government Action." Many witnesses emphasized their belief that with proper dumping provisions properly enforced the unfair competition from American coal and coke would cease. The consumer need not suffer in this process because, with an enlarged market and the ensuing steadier operation, the Alberta operator could give as favorable prices. The second requirement will be the lowest possible price to the consumer in Manitoba consistent with a fair wage to the mine worker, some return on his capital to the operator, and recognition of the functions performed by the distributor. In the third place, the Commission believes that the railways must be called on to assist in this matter. In the section on transportation, it is explained more fully why this Commission has not gone into the question of freight rates in detail; but a strong recommendation is made that a special summer rate to the Manitoba market be put into effect. Such a rate would affect the market for lignite and sub-bituminous coals for domestic use, mainly to the extent to which the consumer could be persuaded to purchase his requirements in advance at a reduced price. Storage of these domestic coals on a large scale by dealers is not to be expected, at least until the market becomes much more stabilized, because they have had unfortunate experiences in the past; but for the steam coals the matter of storage is of much greater and more immediate practical importance. These coals can be stored perfectly well by either dealer or consumer. A

good stock on hand right in Winnipeg would give the assuranc of supply which will assist the making of contracts. As th figures already given in this section show, the present price require only moderate further reductions to enable Alberta coal to capture the trade. From the railways' point of view, most o the imported coals come over foreign roads. An additiona 100,000 tons of Alberta steam coal transported during the seaso of slackness in other traffic even at the rate of $4.00 a ton woul mean $400,000 of off-season revenue besides the incidental adva tages of building up general trade in their territory. It is fo the railways themselves or for the Railway Commission t determine what particular rate can be made and for wha particular periods. Indeed, the Commission hopes that the whol question of revision of rates to the Manitoba market can b given earnest consideration. The operators feel that they hav a strong argument for reduction in the fact that the railway are now paying much less for their own coal than when th present rates were made.

If, when workmen, operators, dealers and transportatio companies have done their utmost, there still remains the nee of a further reduction in price in order to capture the entir market, it will be well worth consideration whether the genera advantages to the whole of western Canada do not warrant som further measures. Long before the recent public discussion o Government aid to take Alberta coal to Eastern markets, similar suggestion was made to this Commission in connectio with the Manitoba market. One operator recommended the re duction of transportation rates from Alberta to Winnipeg t the lowest possible figure and then, if necessary, to ask the peopl of Canada to bear a small portion of the charge through Federa Government aid, being satisfied that no aid ever granted by th Government had produced so large a percentage of return a would be derived from keeping the whole of the western Cana dian market for our own coal.

As a first step to this end, there must be energetic and whole hearted co-operation among the shippers of Alberta coal. The must become efficiently organized for the purpose, to oppos successfully the efficient organization of their present competi tors. The opposition from the latter, however, may not be a strenuous as in the past. Once it becomes apparent that al concerned are determined and in view of the ample supply o suitable coals in this country, exporters from another countr are not going to waste money and effort in a hopeless endeavo to retain the market.

To sum up, then, whatever may be the case elsewhere, th entire market in Manitoba belongs to the coals of Saskatchewa and Alberta. If British Columbia can send in any fuel in com petition so much the better for them; but it is against all reaso that this western country should continue to import instead o building up its own population and business. This campaig should be carried on in full co-operation with the province o Saskatchewan, the coals from which province have their plac

in the market, and with the official support of the province of Manitoba. The Government of Alberta should make a direct appeal to the Government of Manitoba for assistance in the matter. As a first step, all business controlled by that Government or by public bodies should as a matter of course go to Canadian mines, Boards of Trade here should appeal to Boards of Trade there, branch houses to parent houses, and individuals to individuals. Under the slogan "Buy Western Coal in Western Canada," a vigorous campaign by all concerned should, in a short time, capture for the Alberta mines and the mines of Saskatchewan this market so peculiarly their own.

9. Market in the Province of Ontario

Historical: The chart of coal sales (Plate II) shows, by months since 1917, the shipments from Alberta mines for consumption in the Province of Ontario. On the scale of the chart, which was found suitable for the other markets and for the total production, the shipments to Ontario show as a mere line with some little indication in 1923 of exceptional amounts in the months of August and October. The yearly figures taken from the Mines Reports are as follows:

TABLE 85—*Shipments from Alberta Mines for Consumption in Ontario.*

Year	Bituminous	Sub-Bituminous	Lignite	Total
1917	.....	.....	.....	.....
1918	185	.....	410	595
1919	60	.....	248	308
1920	630	.....	13,281	13,911
1921	3,070	.....	6,828	9,898
1922	126	798	20,649	21,573
1923	.....	1,559	50,775	52,334
1924	10	558	15,957	16,525
1925	.....	2,868	25,963	28,831

Starting in 1918 and 1919 with the efforts of a few individual operators and dealers, the endeavor to find a market in Ontario was undertaken in earnest in the year 1922. In that year, the matter was taken up by the Provincial Government, Mr. Greenfield, who was then Prime Minister, giving it much personal attention; and the Trade Commissioner of the Province, Mr. Howard Stutchbury, carried on the campaign with great vigor. Mr. Stutchbury gave the Commission an account of the various efforts of which the following is a brief summary:

In 1922, it was arranged to have three or four cars of Alberta coal shipped to Ontario to find out whether the people there were interested. This coal was shipped to Government officials and distributed by them. Later in 1922, through the co-operation of the Edmonton Journal, the Ottawa Journal, the London Free Press, the Hamilton Spectator and the Toronto Star, another shipment was made which was distributed practically free to consumers in about quarter-ton lots. The coal was furnished by the mines, freight was paid by the Alberta Government, while the newspapers undertook the advertising and featured the national advantages of using Alberta coal. In 1923, there was a

demand for the coal from all over Ontario; and the Canadian National Railway made a special rate of $9.00 a ton good for the months of May, June and July from any point in Alberta to any point in Ontario. The Alberta Trade Commissioner went to Ontario and through the Chairman of the Fuel Committee of the Canadian Manufacturers' Association a series of meetings was arranged to be held in conjunction with the delivery of the coal. Mr. Stutchbury said that about 20,000 tons were shipped under this special arrangement and created a big demand. Before there was any publication of the possibility of shipments in 1924, the Fuel Controller of Ontario had applications for 90,000 tons which amount later increased to over 100,000 tons.

Unfortunately, the whole season of 1924 was consumed in what turned out to be fruitless negotiations between the Alberta Government, the Dominion Government and the Canadian National Railway. A suggestion was made by the Alberta Government to have the railway transport an amount, which was variously given in evidence as 25,000 tons and 100,000 tons, to Ontario with the object of demonstrating the cost of the haulage at a time of year when the movement could be made most economically, namely in the slack period before the grain movement begins. The precise arrangement suggested was that the railway should charge $7.00 a ton, the Dominion Government should stand any additional cost above that up to $1.00, making a total of $8.00 a ton, and the Alberta Government should pay any excess between $8.00 and the $9.00 rate which the railway had itself made the year before. The officials and members of the Alberta Government were firmly of the opinion that this arrangement was concurred in by the Ottawa Government both by correspondence and at a conference with the Federal Minister in Edmonton; but, before the actual Order in Council was passed, the season had become so advanced that the railway people suggested a postponement of the trial shipment to April or May of 1925. As stated, the chief purpose of this shipment was to demonstrate the exact cost of moving the coal in large quantities during an otherwise idle period on the railway. Although the Alberta Government took the matter up in January 1925 and it was publicly announced that all the arrangements had been completed, the Canadian National announced on June 22nd that it did not see its way clear to undertake the experiment. The reason given was that, in the meantime, the entire freight structure on Canadian railroads had been referred to the Board of Railway Commissioners.

It may be noted that the proposal for Dominion Government assistance in the matter of freight rates was not limited to Alberta alone but was also made in connection with Nova Scotia mines. The latter were more fortunate than Alberta in that the arrangement was actually put into effect. The Parliament of Canada at the 1924 session voted a sum of $200,000.00 to provide for assistance in the transportation of Canadian coal to Central Canada by payments to railway companies, under regulations to be approved by the Governor General in Council. Unlike Alberta, the neces-

sary Order in Council was passed, on September 2 1924, to extend this assistance to Nova Scotia. The conditions were that the coal be mined in Eastern Canada, brought by vessels to Quebec, Montreal or other St. Lawrence ports and thence trans-shipped by railways to stations in the provinces of Quebec and Ontario. The bounty to be paid was one-fifth of a cent per ton per mile from the port of trans-shipment to destination. A similar bounty was authorized on bituminous coal transported wholly by rail from mines in Eastern Canada to stations west of Riviere du Loup. The total payment on any shipment was limited to 50c. per net ton and the bounty was not to be paid where, in the opinion of the Minister of Mines, Canadian coal was not in competition with American coal. It was to be paid only for domestic and industrial coal, not for coal used on railway locomotives. It was further only to be paid if the railway companies had granted a reduction from the published rate. According to a press report in January, 1925, 145,200 tons of Nova Scotia and New Brunswick coal had then been shipped under this bounty of 50c. a ton, of which amount 28,000 tons went to Ontario and 117,200 tons to Quebec.

The effect of the various trial shipments of Alberta coal on the consumer in Ontario seems to have been uniformly gratifying to the Alberta shippers. The Commission has been shown a number of letters from dealers and from individuals expressing complete satisfaction with the coal. The best proof perhaps is to be found in the repeat orders which have been reported as having been received for each grade of coal that was shipped in the experiment. After the announcement by the railway above referred to, there was considerable agitation both here and in Ontario and, finally, it was announced that 25,000 tons would be carried to Ontario at a fixed rate of $7.00 a ton. This announcement was made on July 8th, 1925, and the rate was effective to the 15th August of that year. No attempt was to be made to estimate costs. The coal was carried in the ordinary way and for the most part in small cars, with no effort to minimize the expense by using large cars or shipping in trainload lots as had been proposed. Unfortunately, the full amount was not shipped within the time limit owing to the fact that the mines at Drumhaller and Wayne were having labor troubles; and their quota was held until too late to arrange to have the coal supplied by other mines that were operating. In November, at the instance of the Minister of Mines of Ontario, there was renewed agitation for the $7.00 rate and on December 30th, 1925, the C. N. R. agreed to move the balance—some 7,500 tons—at that rate. In January, 1926, the Alberta coal operators sent two representatives to Ontario; and, shortly after their arrival, it was announced that another 25,000 tons would be moved at $7.00 a ton. Finally, on February 8, 1926, the railway agreed to extend the same rate to a third lot of equal size, making in all 75,000 tons. It was stated that this is to be the last until the hearing before the Railway Commission of the special case for a rate on Alberta coal to Ontario. So much for the history up to the date

of the writing of this report. The features of the Ontario market will now be discussed briefly.

Steam Market in Ontario: The market for coal for steam purposes is mentioned only to dismiss it. With a superabundance of American bituminous coal and at the prices normally obtaining, any suggestion for replacing that coal with bituminous coal from Alberta, whether by means of duties on the American coal or bounty to the railways, appears to this Commission to be absolutely impracticable. Compared with an annual consumption in all Canada of about 30 million tons of bituminous coal, the bituminous mines in the U. S. are estimated to have an annual capacity of 300,000,000 to 400,000,000 tons in excess of the present yearly consumption and to have reserves good for at least 1,000 years. It is, therefore, not necessary to contemplate anything more than temporary interruptions in the supply from that source. Should anything interfere with the importation of American coal and the question of supply become more important than the question of cost, the bituminous mines of Alberta and Nova Scotia could be drawn on.

Total Domestic Market and Anthracite Supply: The domestic market in Ontario is in the neighborhood of 3,000,000 tons a year and has, in the past, been supplied largely by American anthracite. That supply, however, has been subject to a constant process of deteriorating quality and enhanced prices. Publications of the Dominion Fuel Board state the U. S. anthracite area as only 484 square miles, good, at the present rate, for only 80 to 100 years. The part serving Canada, indeed, is estimated to last less than 40 years. The supply of anthracite has been subject to periodic interruptions owing to strikes, one of which is now in progress, and each such interruption has tended to weaken its hold on the Ontario market and force the use of substitutes. The Ontario Fuel Controller stated in a recent press interview that the strike of 1922 decreased the natural consumption of American anthracite by at least 20 per cent.

Substitutes for Anthracite—Coke: The chief substitutes are coke, American bituminous and sub-bituminous coals, Welsh and Scotch anthracites and to a minor degree fuel oil. Of these substitutes, coke has been making the greatest progress and it is recommended as the solution of the problem by the Dominion Fuel Board in the publication "Coke as a Household Fuel in Central Canada"; but the conclusions reached in that publication would go to show that it is not a complete solution. After pointing out that it had chosen the cities where the domestic gas demand is sufficient to warrant installation and that others can erect plants as soon as the industrial or domestic demand is sufficient, the Report states that, if a coke plant be erected in each of the centres investigated, the demand for domestic fuel in Ontario and Quebec would be only half supplied. Again, in Chapter 16, it states that it appears probable that Ontario and Quebec can produce 800,000 to 1,000,000 tons of coke which would displace 25 per cent to 30 per cent of the anthracite now in use. With the increasing demand for gas and coke, more and more

anthracite would be displaced. Assuming only a normal increase in gas consumption, it is deemed possible that domestic coke will replace at least 50 per cent of the anthracite now used. Domestic coke sells at $15.00 or $15.50 a ton delivered.

British Anthracite: Welsh and Scotch anthracite are being imported in increasing quantities. According to press reports, the receipts of such coals at Montreal were as follows:

1922	179,708 tons
1923	261,659 "
1924	219,327 "
1925	383,258 "

This anthracite is a higher grade than the Pennsylvania anthracite but breaks up more in shipment. It is also sold in the form of briquettes.

American Bituminous Coal: American bituminous coals of various grades are, under the stress of the anthracite strike, being sold for domestic purposes. The publication "Coke" already referred to states that such coal is undesirable as domestic fuel on account of the smoke and soot. At the present time, Pocahontas coal is being sold at Toronto at $10.50 for mine run up to $14.00 a ton for larger sizes. There are also some so-called smokeless American coals from West Virginia and Kentucky on sale at $12.00 to $13.00 a ton. These prices are higher than normal because the anthracite strike has resulted in an increase in bituminous coal prices in the U. S.

Alberta Coal: From the statements already made, it will be seen that the Alberta coal shipped to Ontario was well received. As all in the province know, it is an excellent domestic fuel, possessing many distinct advantages for the purpose. The fire is easy to start, maintain and control. It does not require any exceptional skill to get the maximum heat out of the fuel. It thus gives in practice much better results than many other coals which might seem by laboratory test to contain more heat units. The Dominion Fuel Board publications state that Alberta coal has given satisfaction throughout the middle West, has competed successfully with U. S. anthracite in Manitoba and has the distinct advantage over U. S. bituminous coal in being practically smokeless. The point need not be labored, then, as to the quality of the various Alberta coals or of their suitability for the domestic trade of Ontario. The one important question is the cost of delivering them in competition with other available fuels. While the results above described have so far been favorable, the shipments have all been made under rather unusual circumstances. In the first instance, they were small trial lots, merely to make the people of Ontario acquainted with the merits of the Alberta product. The bulk of the present shipments, aggregating 75,000 tons at the $7.00 freight rate, is reaching the market at a time when values are abnormal because of the anthracite strike. It has not yet been proved to the satisfaction of this Commission what price relation the various Alberta coals can maintain in a normal Ontario market or that a $7.00 freight rate is the correct one.

Requirements for Reaching Ontario Market: The way in which the freight rate of $7.00 a ton came to be fixed has already been described but may be referred to again. For the trial shipments, the rate was to be the actual cost to the railway when that cost could be ascertained. Meantime, it was necessary to fix some rate for the shipper to pay before calling on the Dominion and Provincial Governments under their guarantee. The railway had named $9.00 the previous year, which led to the proposal that the guarantee should be for the cost up to that amount, after the shipper had paid $7.00 a ton. Later, the C. N. R. conceded the $7.00 rate without the test feature. The Premier of Ontario has been quoted in the press as saying that his Government had experts go into the question of transportation costs very thoroughly, the C. N. R. having allowed them to examine its books, and that it found that the raliway broke even at the $7.00 rate, which met the actual expense of hauling and interest on the money invested in the equipment. No refutation by the railway people of this statement has come to the attention of the Commission. Perhaps they are reserving their comment until the matter comes before the Railway Commission. Meantime, however, the general impression is that the railway is at least not losing money in hauling the coal at $7.00 a ton on a regular traffic basis.

There are other features to be considered besides the fixing of a freight rate. A heavy autumn traffic in Alberta coal to Ontario superimposed on the ordinary grain traffic of the railway would aggravate peak load conditions and call for the provision by the railway of additional equipment and facilities of all kinds. On the analogy of the bunker trade at Prince Rupert, such facilities can hardly be demanded until the trade has been thoroughly proved; and, on the other hand, it is hardly possible to prove the trade without the facilities. From the point of view of the sub-bituminous and lignite mines of Alberta, a large addition to the fall and winter business, while welcome enough to the operators, would likewise be added to the present peaks of production, thus, to some extent, aggravating the problem of the workmen in the mines and involving short time employment for more men. Both the railways and the mines could adjust themselves to take care of this additional winter business; but it appears to this Commission that they should not be asked to do so until the trade has been thoroughly tested out under a plan which will now be discussed.

Summer Shipments and Dominion Subsidy: The Commission, therefore, recommends as a first step a large scale trial of summer shipments of Alberta coal to Ontario. In the summer time, exactly the reverse of the above peak conditions obtains. The sub-bituminous and lignite mines are practically idle and railway traffic is at its lowest point. To introduce a new article rapidly requires price concessions. To induce purchases of fuel in the summer time also calls for price concessions. Why could not the workmen in Alberta domestic mines accept a summer rate in preference to idleness the special rate to be limited to coal pro-

duced for the Ontario market? Why should not the operator make a summer price for Ontario coal in preference to no business? When railway crews are laid off and freight cars are idle, might they not just as well be engaged in carrying Alberta coal to Ontario at a special off-season rate? The whole operation would be precisely on the analogy of the selling of secondary and even tertiary power by a hydro-electric concern.

Such a movement would, of necessity, be limited by the available idle equipment on the railways. This has been variously estimated as sufficient to transport between 350,000 and 500,000 tons of coal from Alberta to Ontario. It should take place under such special conditions as may be found on investigation to fit in best with the other traffic on the railway. The dates for it would probably be somewhere between the 1st April and the 15th August in an ordinary season. In line with the suggested concessions by workmen and operators and to give the consumers sufficient inducement, a really low rate must be fixed for this trial shipment. The Commission suggests that, between the dates and under the conditions outlined, the rate be fixed at not more than $5.00 a ton to the shipper. Along with the granting of this rate and as a part of the arrangement, there should be an investigation by the Railway Commission as to what would be a fair rate in the circumstances and the Dominion Government should be asked to pay the excess if any. Like all other factors entering into it, the investigation to determine a fair rate should be on a strictly off-season basis, not on the basis of this traffic sharing with all other traffic the full general overhead charges of the railway; but such a rate as will in all the circumstances suffice to recompense the railway for doing the business. If it be objected that it is not fair to make an exception of one piece of business and free it from its share of the general expenses, the answer is that this is a wholly exceptional piece of business. It means the creation of something which does not now exist but which would be for the benefit of the workmen and operators of Alberta, the railways and the consumers in Ontario. There can be no danger in creating a precedent which fulfils all these conditions.

Control of Ontario Shipments: The subsidy by the Dominion Government would justify some measure of control by that Government through the agency of the Dominion Fuel Board or otherwise as it may see fit. The Government of Ontario has already shown itself willing to assist in controlling this business. The movement now going on is subject to control by the Ontario Fuel Department to the extent that the retail dealers are limited to a spread of not more than $2.50 a ton, except where the coal is sold in sacks when an extra 50c. a ton will be allowed. Control of the quality and preparation of the coal as shipped can best be exercised by a co-operative effort on the part of the Alberta mines as outlined in Section 21 of this chapter.

General Considerations: The principle of Dominion Government assistance in transporting Canadian coal to Central Canada has been established, as cited above, and has been given effect

to in the case of coals from Nova Scotia and New Brunswick. There can be no doubt of the strong and widespread sentiment behind this whole movement, viz.: the desire to keep Canadian business in Canada. What is here suggested is to have that sentiment find expression, as a first step, in a summer shipment of the character outlined and to let any extension grow naturally out of that. By this method, no strain is put on the railways or the public exchequer and, at the same time, a summer order of even 400,000 tons would save the situation for the workmen and operators of Alberta sub-bituminous and lignite mines. Although it should not be necessary to do so, it may be well to repeat that this recommendation is made merely from the point of view of a first step, letting bigger things follow in their logical order in the future. The fear of this Commission is that if too much is asked from the railways or the Government of the country, before all are convinced of the advantages to be gained, nothing useful will result. Not a few doubts have been expressed in influential quarters as to the possibility of Alberta supplying Ontario's needs, even for domestic coal. This criticism comes from those who are just as anxious as anyone to build up Canadian business and their doubts must be met by a practical demonstration.

C. TRANSPORTATION

10. Freight Rates on Coal

Because there is pending an examination by the Railway Commission into the whole rate structure and also a particular reference regarding coal traffic to Central Canada, this Commission is not attempting to deal with freight rates except as the matter came up in connecton with various markets and except for the following brief discussion arising out of representations made to the Commission. For general information, however, there is attached to this Report, as Exhibit 14 to the oral evidence, Appendix V (not printed), a series of tabulations of existing rates from various points in Alberta to the various markets and from the points of origin of competing coals to those markets, as compiled for the Commission by Mr. A. Chard, Freight Traffic Supervisor for the Alberta Government. In each case, these tabulations show the mileage and the resulting rate per ton mile.

Many witnesses pressed the argument for lower freight rates; because wages and prices have come down materially since the rates were fixed and, particularly, because of the very great reduction in the cost to the railways of their own locomotive fuel supplied by Alberta mines. Much was also made of the fact that the rate per ton mile on coal is uniformly higher than the rate per ton mile on wheat, as the following will show. In the comparison, rates were taken for similar mileages for grain to Port Arthur and Fort William and for coal from Drumheller respectively. Points were chosen which gave these equal mileages:

TABLE 86—*Showing for equal mileages rates per ton mile on coal and wheat.*

Mileage	Rate per Ton Mile on Coal	Rate per Ton Mile on Wheat
230	$1.08	$1.04
400	.77	.70
500	.74	.64
800	.58	.52
1200	.52	.41

Wheat is Class 8 and coal is Class 10. Wheat is a more valuable cargo by at least ten times. A thirty ton car of wheat may be worth anywhere from $1,000.00 to $1,500.00 according to grade and market while a thirty ton car of coal would be worth from $100.00 to $150.00. The chance of loss en route is greater with wheat as is the risk of damage from various causes. Perhaps most people do not realize that the coal output of Alberta creates a far greater tonnage for the railways than the Alberta wheat crop. The shipment of a hundred million bushels of wheat means 3,000,000 tons, whereas the Alberta coal output transported by rail has been in the neighborhood of six million tons. The average haul for wheat, however, is considerably longer so that, on a ton mileage basis, the wheat figures would probably be the larger. For the reason given at the opening of this section, there was no chance of getting the railway companies to present their side of the case; so the Commission can only note this widespread demand for a reduction in rates, a demand which, if successful, would have a tremendous bearing on the extension of all markets. The argument and counter argument in this matter of freight rates must, therefore, be left to the approaching hearings before the Railway Commission.

11. Summer Tariff

The matter of summer tariff may be mentioned again under the heading of "Transportation"; although the matter has been fully discussed in connection with the Manitoba and Ontario markets, for which such a tariff is particularly recommended. The summer slackness in the domestic coal industry is the cause of most of its troubles and special reduced tariffs should help to remedy this evil as well as providing business for the railway. The fact that such tariffs were not taken advantage of in the past is not a valid argument against repeating the attempt under more stable conditions.

12. Railway Weights

The Commission heard a great deal about the difficulty arising from shortage of weights on coal shipments. This shortage seems to run from a few hundred pounds up to as much as several tons per car and, where it exists, it creates continuous disputes and trouble between shipper and customer. Short of actual theft from the cars, which was stated to be the cause in a few cases, this difficulty was chiefly ascribed to wrong weight of the empty car or the "tare" and this latter might arise from accumula-

tions of snow and ice. It is the custom to make allowance for snow and ice; but this may prove not to have been sufficient. On investigation it appears that the difficulty is chiefly limited to the lignite mines of the province and to those mines which have no scales of their own. The latter suggests the obvious remedy that each mine should have its own railway scales. This of course would impose too much expense on the smaller shippers. Where a mine has its own scales, the weigh man is sworn by the Canadian National Freight Association and takes his orders from that Association, although paid by the operator of the mine. His weights are then taken. Witnesses said that at the present time the railways were doing a lot of re-taring of the cars; and it was pointed out that, at any time, a dealer could have a car re-tared for a 50c. fee and the reswitching charges, subject to rebate if anything is found to be wrong with the weights. One definite suggestion was to have a Dominion Government Inspector permanently stationed at the scales with a little extra charge per car for weighing. Until the last year or so, the trouble with weights was not nearly so pronounced; but now that so much attention has been called to it there should be no difficulty in tracing out the exact cause and applying the appropriate remedies. It may be left to the shippers, the railways and the consignees to adjust. It should be remarked that experiments prove that there is nothing in the theory of shrinkage from evaporation of moisture out of the coal as 150 tests conducted by the officials of the Provincial Government showed that the moisture content of winter shipments remained practically constant.

D. MARKETING METHODS IN GENERAL

13. Storage of Alberta Coals

The Industrial Research Council has been carrying on a series of tests as to storage of the various grades of coal. Broadly speaking, the results to date are that, as might be expected, the bituminous coals are exceedingly good in storage; the sub-bituminous coals are still good storage coal; and some of the better grade lignites store under ordinary conditions. Some of the very low grade lignites store badly. The great thing is to keep out rain and sun, as alternating wetting and drying are the worst factors. Oxidation goes on as well. Coal is an extremely unstable material at best and cannot be preserved without change. The Fourth Report of the Research Council gives the following:

TABLE 87—*Comparative disintegration loss on storage of domestic coals.*

Normal Moisture Content in Coal as Mined	Comparative Disintegration Loss 1 Year's Open Storage
5% to 10%	1% to 5%
10% to 20%	5% to 15%
20% to 30%	15% to 30%

It should be noted that the disintegration does not mean absolute loss but only the production of more fines. It should also

be noted that the above resulted from small scale tests. There would be much less damage in large scale storage, even in the open, because the part exposed would be much less in relation to the whole mass. The conclusion reached was that the rate of deterioration depended on the weather, being least in the winter months, probably worst in the early spring, with thawing and freezing, and also bad in the hot summer months. The general conclusion was that these domestic coals should be kept under cover of some sort. There is no evidence, however, to prove that the advantage to be gained by having concrete sheds or other special devices would compensate for the additional expense. Undoubtedly, the best storage is in the consumer's basement; and there even the lowest grade of coal will store perfectly well for a season.

14. Summer Marketing

This feature of storage in the consumer's basement leads up naturally to a discussion of increasing the summer marketing of coal. Nothing would be of more benefit to the lignite coal industry of the province than a concerted effort to encourage summer buying. The particular suggestion of a large scale shipment to Ontario has already been given in discussing that market. Formerly, there was considerable summer business but, with the great over-development of the mines, it not only became unnecessary, for the protection of the consumer, to lay in a stock in advance but the dealer had several unfortunate experiences in doing so. A subsequent drop in the price of coal left him in the position of actually losing money on his venture. If it were not for the aggravated problem of seasonal unemployment for the workmen, there would be something to be said for a system of shipping the coal just when it was needed. Summer storage involves a certain amount of expense in providing storage space, interest on the money tied up, as well as some slight danger of deterioration and all of these things go to offset the expense in keeping the mines idle. But for the workmen the problem is much more serious; and it is this feature which urges that a solution be sought along the line of building up a summer market. This can no longer be encouraged by threats of a winter shortage; because the over-capacity of the mines is too well known; but, under more stabilized conditions as to price of coal, it should be possible to give the dealer and consumer of domestic coals sufficient inducements to buy and store in the summer time.

15. Quality of Coal and Preparation

As noted above under the various markets, there have, at times, been complaints as to the quality of the coal and its state of preparation. On the other hand, many witnesses give the other side of the story. One large dealer stated that the preparation of Alberta coal had been improving year by year; and, while it was very important that even the miner should realize how intimately his interests in this connection were tied up with both the operator and dealer, he thought that all possible pre-

cautions were being taken and that any complaints were usually satisfactorily adjusted. Another dealer testified that the quality of Alberta coal for the last two years, especially, had been really very good. Many, however, emphasized the necessity for some standardization in the matter of sizes. Incidentally, it is accepted that bar screens do not give good preparation and such screens are not used in any of the larger mines. The Research Council as a result of a questionnaire has adopted the following, as standard sizes:

Lump coal—passing over a screen with 3 in. circular perforations.

Egg coal—passing through 3 in. and remaining on 1½ in.

Nut coal—passing through 1½ in. and remaining on ¾ in.

Pea coal—passing through ¾ in. and remaining on ¼ in.

Dust—passing through ¼ in.

Slack—everything passing through ¾ in.

Nut slack—everything passing through 1½ in.

It is very important that uniform standard sizes should be adopted and the above seems to this Commission to be a suitable scale.

Under the Coal Sales Act, 1925, the Lieutenant Governor in Council has power to classify and grade coal and shippers and dealers are required to state the size of the coal shipped. These provisions should enable the province to set up a legal standard of sizes; but, to make it effective elsewhere, this should be done in consultation with other provinces. Where bar screens are being used, it would also be necessary to determine the equivalent to the above screening through a circular perforation. The Commission recommends that legal standards for the sizing of coal be established without delay.

16. Consumers' Preferences

From the numerous references by witnesses and others, it is evident that consumers' preferences are a very marked feature of the coal business and something that must be reckoned with. It was brought forward in connection with many suggestions. For instance, it was held to be a difficulty in the matter of pooling of coal for marketing purposes that the salesman for a pool of similar coals would be at a disadvantage against a salesman who had many coals to suit all tastes. This is something distinct from choosing the coal which on a scientific basis would give the best results for the requirements of the particular consumer. Naturally, this matter of personal likes and dislikes applies mostly to the domestic market. The larger consumer gets down to a more scientific basis of determining his choice of fuel; but it is impossible to ignore the evidence of many dealers who appeared before the Commission that, in a practical, everyday business way, regard must be had to these consumers' preferences; and that it is much easier to sell a man the coal he wants or thinks he should use. There would even appear to be fashions in coals.

17. Methods of Handling Sales

There are many methods of handling the sales of coal from Alberta mines. Some sell through one large organization; others let three or four or more different selling organizations handle their coal; and some sell their own product. Generally speaking, however, there are both wholesalers and retailers intervening between the mine and the consumer: and nothing is more firmly fixed in the popular mind, with reference to the coal industry, than the belief that there are too many middlemen; and that they are too highly paid. The same belief applies not only to the coal industry but to the handling of almost every other commodity; and there is undoubtedly a strong modern tendency to attempt to reduce the stages and the cost of the process of distribution. It seems a very simple thing to say that a car of coal, containing say 30 tons, should be shipped to three individuals each wanting 10 tons, which they are able to pay for and can thereby get at the bare cost of freight and cartage to their respective basements. The retail dealer has very few friends in the abstract; but, on the particular cold day the man who has neglected to get coal in his cellar in the way above mentioned finds it extremely convenient to be able to order a few tons for which he promises to pay when he can. The need for stocks and credit and to put the producer in touch with the consumer have brought about the existence of the middleman in the coal trade as in other business.

Wholesalers: The investigations for the purposes of this Report would indicate that the jobbers or wholesalers get commissions ranging from 10c. to 35c. a ton, with perhaps a general average of 25c. For this, they perform many services that would otherwise require a Sales Department in the operator's own office and in addition, in most cases at least, they guarantee the accounts of the retailers, that is to say, they pay the producer for the coal and take a chance on collecting from the retail dealers.

Retailers: The retailer's spread, as revealed to the Commission in the course of its work, runs anywhere from $1.50 to $3.50 a ton, with a general average, perhaps, of $2.50. This may be very nearly the price for which the coal is sold at the mine or, at least, may be more than is paid to all the men engaged in extracting it from the ground. Nearly everyone approaches this matter of dealer's spread with the preconceived idea that it is much too great; but the proof that such is the case turns out to be not an easy matter. In the first place, this spread has to cover what is known as degradation in the coal. This term is used strictly in the sense of loss of grade. What was charged to the retail dealer as lump coal may, when loaded out of the car in such a way as to give lumps to the consumer, leave the dealer even as much as two or three tons of stove coal or two or three tons of slack. One large dealer stated that, out of a 35 ton car, 30 tons could be sold for the full retail price; 2½ tons for from 50c. to 75c. less a ton; and the remaining 2½ tons might, at times, be a drug on the market; or, at other times,

the dealer would take a loss on these of something like $5.00 a ton on the retail price. This feature becomes aggravated when, as in most cases, it is necessary to put the coal in stock and take it out again. Dealers testified that whenever they put coals for the domestic market on the ground to be picked up again it meant a loss of $1.00 a ton. This, then, is the first factor in retailing cost and it suggests an obvious remedy of delivery direct from car to consumer. Unloading costs were given to the Commission as from 20c. to 25c. a ton. Delivery naturally varies with the local conditions, being anywhere from 75c. to $1.25 a ton. In some cases to meet competition, delivery is made anywhere at a flat rate; in other cases, the consumer is made to pay the extra that it costs the dealer to reach him, if he lives in the outskirts. The loss in bad debts does not appear to be very great; at least according to the experience of most of those who appeared before this Commission. It does amount to something and has to be provided for; but, spread over the entire business, it would not come to a very large amount per ton. There are, however, the carrying charges of giving credit apart from such losses. One dealer, indeed, said that, rather than put a credit customer on their books, they preferred to offer him a discount of 50c. a ton on the coal to induce him to borrow the money elsewhere; and this witness thought that it would have a very good effect if all dealers would make a difference of 50c. a ton as between cash and credit business. To these items are added the expense of such things as providing storage space, advertising and general business expenses only the balance, if any, being the net profit to the proprietor of the retail yard.

Campbell Commission: Owing to complaints made in Winnipeg against certain coal dealers, the Department of Labor at Ottawa ordered an investigation under the Combines Investigation Act; and the report of that investigation by Commissioner D. Campbell, dated 28th February, 1925, goes very exhaustively into this whole question of the function, costs and profits of retailers. Because that investigation had been so exhaustive and recent, this Commission did not consider it would serve any useful purpose to cover the same ground. The Campbell Commission investigated not only dealers of the City of Winnipeg but throughout the Prairie Provinces as well and some of its conclusions may be quoted.

Commissioner Campbell says: "I have come unhesitatingly to the conclusion that shed and bin accommodation and reserve supplies of coal are absolutely essential to a retail coal business in this country. Our weather and climatic conditions cannot be foreseen; and dealers must be prepared at all times to meet the demands of the public for an ample supply of coal or great hardship and suffering would periodically be met with. I am of the opinion that the coal dealer who avoids carrying his fair share of the burden necessary to maintain a substantial reserve stock is avoiding a duty which he owes to the consumers, which cannot be compensated to them by the small reduction he makes in his price.

"The retail dealers of Winnipeg called to testify were obliged to furnish statements of their costs of handling coal in detail, including salaries paid managers and office help. The salaries paid are very modest. . . . The average cost per ton of handling coal last season was about $2.57 per ton. Some dealers appear to have operated at a loss; others show a net profit as high as 38c. per ton. . . . Without attempting to fix definitely a fair margin between buying and selling costs, I have, however, come to the conclusion, after a careful examination of overhead and all other incidental expenses involved in retail coal business and having gone to the trouble of personally inspecting the methods employed by many of the large dealers in handling their coal, that I am unable to say that an average spread of $2.57 per ton will yield a net profit at all commensurate with the money invested and the risks that must be undertaken."

Mr. Campbell also concludes that it is impossible to eliminate the giving of credit to consumers and that as long as it is done some losses will occur. He, therefore, finds the charges unsupported by the evidence and that the costs of operation "are not unreasonably high or unfair having regard to the obligations which retail coal dealers assume and which they ought to assume."

Under conditions as they have existed this Commission, then, feels compelled to reach very much the same conclusions but there are several directions in which relief should be sought from what is undoubtedly a very heavy item in the total bill to the consumer.

Too Many Dealers: In the first place, there are far too many retail dealers. If this number could be materially reduced, the operation would be much more economical, each item of the necessary overhead being spread over a larger tonnage. Apart from the mere factor of cost, Alberta coal has undoubtedly suffered from the "snowbird" dealers disturbing the market. There are two directions in which to seek a remedy for this condition. Many dealers said they would welcome greatly increased license fees to be charged by the cities and more stringent regulations, requiring dealers to be properly equipped for the business. This is the feature so well referred to by Commissioner Campbell in the quotation given above. It is certainly hard on the legitimate dealer when the "snowbird" with only team and wagon takes the cheap and easy business, while the legitimate dealer is carrying the stocks to meet the emergencies. The chief remedy, however, for too many dealers lies in the hands of the coal operators of the province. So long as they are acting as individual units, without any co-operation, and ship coal to anyone who asks for it, it is hard to see how these difficulties can be avoided.

18. Distress Coal

This disturbing feature has been mentioned in connection with the Winnipeg market, where it chiefly occurs. "Distress coal" is the term applied to coal shipped on consignment to Winnipeg in the first place or routed to Winnipeg after being refused else-

where. In due course, demurrage begins to accrue on it and, finally, the shipper cuts his loss and takes a very low price for the coal. Witnesses differed in their estimate of the extent to which this prevailed; but that it is sometimes serious would appear from the evidence of one operator who mentioned getting a wire that there were fifty cars of distress coal in Winnipeg that morning. A suggestion was made to have the trade combine to buy such coal and thereby remove its disturbing effect; but such an arrangement would only encourage the practice. The Commission agrees with the statement by one operator that the attempt so far made to create a consignment market in Winnipeg had been so disastrous and expensive to the shippers that it must eventually be stopped by the fact that it does not pay. Those attempting this were modelling themselves on the practice in much larger markets, where consignment coal can be absorbed without difficulty.

E. CO-OPERATIVE MARKETING

The particular difficulties of the coal trade above described, as well as the experience in other lines, naturally lead to the suggestion of some form of co-operative marketing or pooling as a solution.

19. Souris Pool

A definite plan of this kind has been in operation in the Saskatchewan lignite mines for more than a year and, so far as the Commission has been able to ascertain, it seems to be working out very satisfactorily. It will, therefore, be of interest to give a fairly full account of this pool. The Saskatchewan lignite pool was formed, on the 1st September 1925, by six mines joined later by a seventh. Together, these mines were producing from 80 per cent to 85 per cent of the total output of the field. The pool embraces all of the larger mines with one single exception. The principle underlying the pool is that the available business is to be offered to each mine in proportion to the respective outputs the preceding year. It was reported that this matter of allotment has been the chief difficulty in the way of the other large mine joining in. One of the things to be overcome in the formation of this pool was the fact that the individual mines had contracts for the disposal of their output through certain distributors. This was overcome by getting all these distributors together into a company, called the Souris Coal Distributors, which handles the entire output of the pooled mines. There is an arrangement that no one individual can acquire control of the distributing company; and it is bound to sell only the output of the pooled mines. The distributing company gets a straight commission of so many cents per ton, irrespective of the grade or selling price of the coal; but this commission on a tonnage basis is, once a month, converted into a percentage of the selling price and is paid by the individual mines in proportion to that price. The mine, therefore, that gets the highest average selling price for its product pays more cents per ton commission.

The pool maintains an office at a central point, with a man in charge who is known as the distributor. He receives all orders from the sales company and distributes them to the different mines in proportion to their shares, as set out in the agreement. All shipments are reported to him each day and he gets a copy of each shipping bill. He makes out a statement of the tonnage shipped each day and sends a copy to every mine in the pool. When any mine fails to make prompt shipment of its allotment, the surplus is awarded to the other mines and is a permanent loss to the mine that could not fill the order. This surplus tonnage does not count against the allotments of the other mines. In this way, a mine that has better facilities or better luck can, in the course of the year, secure a larger tonnage. The allotment is to be revised once a year and, if the parties cannot agree, there is provision for arbitration. The expenses of the pool as such are apportioned in the ratio of the allotments. Outside of the commission to the sales company, the expenses of the pool were estimated at not more than 1c. per ton.

The distributor is responsible to an Executive Committee of three. Each mine in turn gets representation on this Executive Committee, one member of which retires every two months. The Committee visits the mines to examine the methods of preparation, especially in case of any persistent complaints, and the Committee also deals with delay in shipments, special prices to be quoted by the sales company for contracts, etc. The practice has been established of having the whole of the operators visit all of the mines in order to standardize preparation as far as possible. They have adopted the preparation at the best equipped mine as a standard and are endeavoring to make the coal from the other mines come up to this. Special requests for coal from any particular mine are met as far as possible; but they endeavor to have the dealer give a choice so as to avoid difficulty with the allotment. Up to the time when the information was given to this Commission, there had been no great difficulty in giving each mine its respective allotment; although some had to be content with the cheaper priced mine run orders. They had several contracts that could be used to balance the allotment.

It is reported that at first the pool was met with a certain amount of suspicion and those outside tried to use the argument of its being a combine, etc.; but later information is that the dealers in these coals are strongly in favor of the pool, as they have some guarantee of a stabilized price, more certain delivery, more uniform standards, protection from "snowbird" dealers, etc., etc. The mines through the pool have cut out dealers who were not properly equipped as such, those whose credit standing was not of the best and, to a large extent, the paying of double and in some cases treble commissions. The operators are reported as pleased with the result. They think that they are avoiding the over-lapping of salesmen and that the one strong central selling organization is able to make a more effective canvass of the market available to their coal.

The other side of the story is given by a statement to the Commission that, since the formation of the pool, the one large independent company had increased its tonnage. All of the agents accustomed to the handling of such coal, whose services were dispensed with by the pool arrangement, concentrated on the sale of coal from the independent companies. Apparently, there has not yet been any attempt to cut prices as between the pool and the non-pool mines. Indeed, one of the immediate causes of the formation of the pool was the realization that prices were being cut for no purpose. There is also the difficulty of new mines starting up. Such mines may be taken into the pool but, having no past record to base their claim on, difficulty is expected in the allotment to such mines. On the whole and so far as the Commission is in possession of information, the Souris pool seems to have been a success. It must be realized, however, that the field is very concentrated and the product quite uniform, the chief difference being in the matter of preparation which is controllable.

20. Other Pooling Arrangements

The Commission has endeavored to examine pooling arrangements that have been in effect elsewhere but with the exception of the Souris scheme which has been described in detail not much help was derived from this attempt.

The Collieries in South Africa have a Coal Owners' Association which sells the entire output, fixes the price of coal, allots the tonnage, etc. There is a heavy penalty for any member selling the coal outside the Association at the risk of having the colliery shut down. The price of coal is so fixed that long distance points can be reached and the market extended. In other words at points nearest the collieries the pit price of coal is kept up. The price thus obtained is pooled and the various companies are paid for their coal on an equal basis subject to certain adjustments for calorific values and in some cases subject to increase in price allowed to meet local mining difficulties. This arrangement was specially sanctioned by legislation and its counterpart might be held illegal under Canadian laws until a modification of those laws could be obtained. The South African Pool has been reported as a very effective solution for the problems there.

There have been a number of pooling arrangements in the United States short of amalgamations and mergers but the conditions there are so different that the results are of very little value in studying Alberta's problem.

21. Co-Operative Marketing of Alberta Coal

Arguments in Favor: Particularly in the Drumheller field, suggestions for a plan of co-operative marketing or pooling have been made periodically for a number of years. Many witnesses before the Commission and many of the replies to the questionnaires advocated such a measure. Coal distributors added their testimony to the same effect, even though it might turn out to

be against their particular interests, one such witness stating that he saw no reason why the operators in this province could not go in together, pool their interests and sell their coal as a business proposition, so long as it was kept under private control. Those in favor thought that such an organization would benefit both the mines and the consumers. It would centralize distribution, although the view was strongly expressed that it should be confined to wholesaling and not attempt to extend into the retail end of the business, because of the credit difficulty and because it is so easy for others to get into the retail business. All those in favor were satisfied that it would cheapen distribution; but they varied greatly as to their estimates of the saving to be effected. One operator and one well-informed distributor estimated the saving at 10c. a ton; another distributor thought that the saving might run to 15c. or 25c. These estimates impressed the Commission as being made by those who were better able to name an exact figure than were some other witnesses, who made much more extravagant claims for the saving that would be achieved. It was thought that a concentrated effort would be a help in widening the markets and that it would stabilize prices and the business generally.

Arguments Against: The arguments against an attempt to form a pool were just as strongly expressed to the Commission. One witness thought that, as contrasted with the wheat pool for example, an underlying difficulty was that the entire product could not be sold. Many others emphasized this feature of the superabundance of coal and the great over-development of the mines. To continue the comparison, coal could not be graded like wheat. Several witnesses found this question of kinds of coal and preparation a very great difficulty. It brought in the whole range of customers' preferences to which allusion has already been made. These were put forward as what might be called fundamental difficulties in the situation. Other difficulties arise from human nature. Successful operators took the stand that they did not need this help and felt that if they had a better class of coal or better preparation they would lose and not gain by putting it in with the inferior product of other operators. Unless the pool could prove that it could secure a higher price or better maintain a fixed price, the individual operator would in time become dissatisfied. As mentioned under the Souris Pool, the difficulty of apportionment among operators is undoubtedly very great. The greater the number of individual operators concerned and the wider the variation in the quality of their coal or their other natural conditions, the greater would be the difficulty of persuading them all that they were getting their fair share. Even if all could be got to agree in the first instance, witnesses pointed out that an operator with ambition hoped to improve his relative standing and, in this regard, the tendency of the pool might be to remove the incentive to more effective operation. Others put forward the difficulty of controlling the preparation of the coal. It is recorded above that in the Souris Pool the distributor exercises control over this and all the opera-

tors visit all the mines; but undoubtedly this problem would become more difficult in a larger pool.

Alternative Proposals: As noted above, a great deal was made of distributors' and consumers' preferences in the matter of coal and one of the strong objections to the pooling arrangement was found in this fact. It was stated that, in a fair sized country point, there would be as many as five or six dealers, who would take coal from that many mines, and it was held that a salesman with an assorted list of coals could do more business in that town than the salesman for the pool, because of the ability to sell to each dealer according to his preference the precise kind of coal he wanted and to enable such dealer to offer something different from his competitor. Several, who recognized the waste in individual marketing, urged a combination of coals in preference to a pooling of the product of one district. In this connection, mention may be made of Coal Sellers Co., Ltd., which handles 13 different kinds of coal from as many mines, scattered through all the different districts of Alberta. This Company does all the advertising, travelling and financing, taking full responsibility for the dealers' accounts. Its representatives did not pretend that they could sell the output of their respective mines the year round—nobody could; but they sold all that was possible and kept the mines fully advised in advance. Outside of railway contracts, this Company has the exclusive marketing of the coals they handle. Thus the operator is free to devote his attention to the business of mining coal and keeping down costs, turning the distribution over to specialists but not on a pooling basis. The question of amalgamation of mines or mergers will be discussed in a subsequent chapter but many witnesses felt that amalgamation would be better than any attempt at pooling.

Independent Mines. In both cases, however, the difficulty of new mines or of mines remaining out of the pool was recognized to be very great. Some witnesses thought that, with a properly managed pool, the mines staying out would not be able to compete; but others regarded the independent mine as having a distinct advantage, as a free lance in the market, able to get business in much the same way that the independent mines of the Souris field have been found to do.

The above discussion will indicate the variety of the opinions and sentiments on this very important question. Judging by the representatives who appeared before the Commission or dealt with this matter in their replies to the questionnaires, the majority in number of the operators are favorable to the principle. On a tonnage basis, however, the division might be different, because one very large operator in the Drumheller field is an uncompromising opponent of the plan and seems unalterably convinced that it is impracticable.

Number of Pools: Assuming that the principle of co-operative marketing were to be adopted in Alberta, how many pools should there be? Taking the lignite field alone, several suggested three combinations, one covering Lethbridge and Taber, a second

for Drumheller and Wayne and the neighboring mines and a third for the northern lignite field. Other witnesses went farther and would have five or six selling combinations within the single Drumheller field, thereby effecting just that much saving in the selling costs of the individual mines and, perhaps, obviating some of the difficulties in the way of a complete combination in the district. One supporter of this plan instanced the grain elevator business, saying that an elevator disliked going into a town alone and preferred to have moderate competition, in order to satisfy the customers that the prices and treatment were on a competitive basis.

Conclusions as to Co-operative Marketing: This Commission considers that co-operative marketing, while very desirable in itself, is by no means a remedy for all the ills of the coal industry of Alberta. Indeed, if it could be established universally, it would tend to perpetuate the present condition of over-development. The Commission also considers that it will be difficult to have an ideal pool until something is done to prevent the opening of more mines until they are needed. This question of controlling further development is discussed fully in Chapter IX. The Commission, too, is of the opinion that economics are required on a larger scale than can be secured merely through co-operative marketing and that, in time, a solution will be found in a more complete merging of the mining interests. However, unless and until these more complete remedies can be applied, co-operative marketing or pooling should result in considerable economy in marketing, as well as increasing its efficiency. Whatever difficulties exist in working out the details can certainly be overcome by determination on the part of all concerned. It might be well to begin first with particular markets. If a special summer rate to Ontario can be secured, there should certainly be a co-operative effort in that market, in preference to the expensive and confusing plan of having each mine individually canvass for orders. A pooling of interests in the Manitoba market is urgently needed for the best results there. The special difficulties of that market have been fully described and emphasis laid on what may be classed as "dealers' difficulties." A pool or a series of pools in Alberta for the purposes of the Manitoba market should remove all these difficulties and be of immense benefit. Co-operation then, could take place for special purposes, such as the Ontario and Manitoba markets, before attempting to control the business nearer home.

In the same way, before attempting anything more ambitious, it would probably be necessary to have three marketing organizations for the lignite fields, namely Southern, Central and Northern, and at least one separate organization for the sub-bituminous mines of the province. If the steam coal mines of the province would combine for the marketing of their product outside their sales to railways, there would be required a Southern and a Northern organization. As to the exact scheme the Commission has described in full the Souris plan because, in its main lines, it seems a suitable model. In most cases, however,

the distributing organization could be directly owned and controlled by the members of the pool. It would be a matter for decision in each particular market whether the distribution could with advantage be carried a stage further and the retailing done by the pool. It seems to this Commission that the latter stage should be undertaken with great caution. With the degree of support and control that could be afforded by the pool, it should be possible to remove the evils of the present retailing system and still retain the advantages of that system.

F. COMPETITION

22. United States Coal

In Chapter IV. on operating conditions and in the foregoing sections on the Manitoba and Ontario markets, there has been a full discussion of this form of competition and it has been pointed out that the U. S. has a superabundance of coal, an excess of mine capacity and for the most part, much better natural conditions, with all the advantages of larger production. The reader of this Report is referred to the above sections of it for details and for suggestions as to meeting this competition.

23. Saskatchewan Lignite

Coal from the Souris field is sold at the mine mouth for about $2.50 a ton for lump and about $2.10 a ton for run of mine. As has been noted under the respective markets, this coal makes effective competition in the neighborhood of the mines in Southeastern Saskatchewan and is something of a factor in the Winnipeg and Southern Manitoba market. Witnesses stated that for domestic use this coal is not very popular in the severe weather but there is quite a large consumption of it in the early fall and the late spring. In parts of Saskatchewan adjacent to the mines the very low price delivered brings this coal into direct competition for steam raising purposes with the Alberta steam coals, plants having been equipped with the necessary fixtures for burning the lower grade fuel. The attempt to produce a higher product from it by carbonizing and briquetting has been abandoned by the Governments of the Dominion and of the province of Saskatchewan, after a great deal of money was spent on the plant at Bienfait. For the present, therefore, there is nothing of this kind in prospect which might make the inferior lignites of Saskatchewan more formidable competitors of Alberta coal.

24. Coke

As pointed out under the Manitoba and Ontario markets, coke is proving very serious competition in those markets and its use is increasing. Because of the proximity of the mines, there is no likelihood of competition from this source, within the province of Alberta itself, assuming any considerable proportions; but it must be reckoned with to some extent in the province of Saskatchewan. "Coke as a Household Fuel in Central Canada," pub-

lished in 1925 by the Dominion Fuel Board, gives a complete account of the processes of manufacture and the properties of this fuel.

25. British Coal

Competition from this source has been discussed under the Ontario market and need not be repeated here.

26. Hydro-Electric Power

Taking Canada as a whole, the competition of hydro-electric power is very great. It has been calculated that, for industrial purposes, it would take 27,000,000 tons of coal a year to equal the hydro-electric power now in use in Canada and over 21,000,000 tons a year to equal that used in Ontario and Quebec. A report of the Dominion Fuel Board gives the coal equivalent of water power as about 9 tons per year per horse power at the turbines but states that electric house heating is impracticable and that, in any case, the peak load for heating would be superimposed on the peak load for power. According to a report by the Conservation Commission of Canada, there were, in 1918 in the province of Alberta, 4 hydro-electric plants, with a total capacity of 31,980 horse power and 42 plants, with a total capacity of 51,805 horse power, producing electricity by steam. No later figures have come to the attention of the Commission to show the extent of the present competition between hydro-electric power and Alberta coal within the province but various witnesses referred to features of this competition. For example, the Commissioner of the City of Calgary said that in 1922 that city used twice as much coal as at present, the increase in the use of hydro accounting for the reduction, and a retail dealer there said that the summer retail trade had gone altogether, because the people were using electric cookers as well as gas and wood. It is significant of the severity of the competition from hydro-electric power that, where it is available, coal mines, which can sell their coal as run of mine and hence have no waste product to dispose of, make use of hydro-electric power in preference to running their own power plants. Other mines use power from central stations burning coal. The question of large central power stations located at the mine will be discussed briefly later on in this chapter.

27. Wood

Wood is a constant factor as competition with coal. Taking Canada as a whole approximately one-quarter of the per capita fuel consumption is wood. Sawdust, slabs and other waste products make very effective local competition in certain instances in this province.

28. Natural Gas

Numerous witnesses referred to the loss of business through the competition of gas, particularly in the cities of Calgary and Edmonton, and the Commission went quite fully into this matter, because of its importance to the mines serving those localities. The following information was furnished by Mr. Yorath, President and Manager of the two companies mentioned below.

Coal Tonnage Displaced: The Canadian Western Natural Gas, Light, Heat & Power Company, of Calgary, supplies gas to Calgary, Lethbridge, Macleod, Claresholm, Nanton, Okotcks, Granum and Brooks. The consumers on that system number about 13,000 for the city of Calgary and 1,450 for outside points and the total consumption, for the year ended 30th September, 1925, was 2,670,000,000 cubic feet, equivalent to 173,100 tons of coal. Extensions are in prospect to High River, Taber and certain additional districts in Calgary, with an estimated maximum increase of 1,000 in the number of consumers, making the total prospective consumption 3,500,000,000 cubic feet, equivalent to 218,750 tons of coal. The Northwestern Utilities, Ltd., supplies gas to Edmonton, Bruce, Holden, Ryley, Tofield, Viking and Shonts. The number of consumers in November last was 5,732 for Edmonton and 438 for outside points, with an estimated consumption for 1925 of about 2,000,000,000 cubic feet, equivalent to 125,000 tons of coal. The expectation of this system is about 9,000 consumers, with an annual consumption of 2,500,000,000 cubic feet, equivalent to 156,250 tons of coal. The total prospective consumption of gas in the province on the above basis is about 6,000,000,000 cubic feet annually, equivalent to 375,000 tons of coal, making a very substantial inroad into the market.

Gas Supply: The supply of gas for the Southern system is from wells in the Foremost, Bow Island and other fields with an open flow capacity of 64,000,000 cubic feet per day. The Royalite well in the Turner Valley field has a capacity of 18,000,000 to 20,000,000 cubic feet a day and, if other wells in that field yield as much gas, there will be sufficient for sale in Calgary at reduced prices for industrial purposes the year round. At the present time certain industries in Calgary are allowed to use gas in the summer but are cut off in the winter. As against the above capacity, the estimated peak load for the present season is 30,000,000 cubic feet per day. The supply of the Northern system is from the Viking field, with an open flow from 12 wells of 54,000,000 feet per day. A well has never been drilled in the Viking field without striking gas; but it is not expected that gas will be available for industrial purposes in Edmonton. Mr. Yorath stated that all public utility bodies in the United States have adopted the policy of conserving the natural gas supply for domestic use. To use it for industries was to build such industries on a false basis and exhaust the supply very rapidly. It was felt that the convenience of the householder meant the greatest good to the greatest number; and this might be taken as a settled public policy. In the case of the supply from the Royalite well, however, the output of gas is incidental to the production of gasoline and the gas must be used.

The heating values of the various gasses is approximately:

Bow Island Field	900	B. T. U.'s per cubic ft.
Viking Field	1,050	" " " "
Turner Valley Field	1,100 to 1,200	" " " "

According to an estimate made by Professor Robb of the University, natural gas at 966 B. T. U.'s per cubic foot and coal at 8,000 B. T. U.'s per pound meant that gas at 48c. per 1,000 cubic feet was equivalent to coal at $7.92 per ton.

Gas Rates: The rates charged for natural gas at present are as follows:

Calgary—						
First	200,000	cu. ft.	per month	43c	net per	1000 cu. ft.
Next	250,000	"	"	40c	"	" "
Next	550,000	"	"	35c	"	" "
All over	1,000,000	"	"	30c	"	" "

The industrial rate is yet to be fixed but it won't probably be lower than 20c per 1,000 cubic feet.

Edmonton—						
First	60,000	cu. ft.	per month	45c	net per	1000 cu. ft.
Next	20,000	"	"	40c	"	" "
Next	20,000	"	"	35c	"	" "
Next	100,000	"	"	30c	"	" "
All over	200,000	"	"	25c	"	" "
Industrial Rate—						
First	500,000	cu. ft.	per month	30c	net per	1000 cu. ft.
Next	1,000,000	"	"	25c	"	" "
All over	1,500,000	"	"	20c	"	" "

At the above rates, the Gas Company in both cases is confident that it can get and hold the business as against coal for domestic use. They are also endeavoring to prove that they can compete on larger installations. This winter the Southern Company took over the heating of all the Calgary city buildings, guaranteeing that the cost would not exceed the cost with coal which ran to about $30,000 a year. The calculation has been made that, to replace coal at the Edmonton power house, gas must be supplied at 12c per 1,000 cubic feet, whereas the Calgary power house could use it at 20c per 1,000.

Gas Taxes: Some of the witnesses thought that the competition was unfair in that the coal men paid a tax of 5c a ton to the Provincial Government, while the gas companies paid no taxes. In refutation of that criticism, Mr. Yorath furnished the Commission with a statement of taxes paid by the Southern Company to the City of Calgary and various towns and rural municipalities, aggregating over $32,000 a year. The basis of taxation in the City of Calgary was an assessment of $500,000, as a franchise tax, and in Lethbridge an assessment of $60,000. In the various school districts, the assessment is on the value of the pipe line. In addition, this Company paid the Provincial Government taxes of about $5,000, being the Corporation tax together with a quarter of a cent per 1,000 cubic feet of gas. The Northern Company paid to the City of Edmonton and the various towns, municipalities and School Districts about $30,000, and to the Provincial Government about $3,000. It will be seen that the Provincial Government tax of one-fourth of a cent per thousand cubic feet on gas having 1,000 B.T.U.'s per cubic foot is precisely equivalent to a tax of five cents a ton on coal having 10,000 B.T.U.'s per pound.

Prospects: As to the continuation of this competition, in addition to the surplus indicated above, there are said to be other likely prospective fields of supply. For example, the Rogers' field thirty miles south of Foremost has produced 20,000,000 cubic feet a day. There is, too, the possibility of finding wells in Saskatchewan to furnish gas to some of the cities in that province. While the history of all gas fields is that they play out in time, there is nothing to indicate to the coal men of this province any immediate relief from this form of competition.

29. Oil

At the present time oil comes in competition with Alberta coal only in the way referred to more fully under the railway market (Section 3 of this chapter). Fresh discoveries of oil might at any time increase the competition from this source.

G. METHODS OF USE AND BY-PRODUCTS.

30. Power Stations at Coal Mines

The locating of large central energy stations at the mouth of the mine and shipping electricity instead of coal are marked features of the recent development in many parts of the world. Such installations are quite common in Europe; and a broad scheme of this character has recently been announced as part of the programme of the British Government. Great advances have been made in the efficiency of large steam stations and the cost of power produced in such stations compares favorably with hydro-electric power, except where the natural conditions for the latter are exceptionally good. In parts of the U.S., as well as in Europe, tremendous increases are being made in the uses of electricity, the aim being to provide current on the farm as well as in the towns and the cities. Such development on a large scale for this province may be feasible much sooner than might be expected from present conditions. A comprehensive scheme should be prepared in advance in order to ensure the production of the necessary power in the most economical way, to avoid wasteful over-lapping of distribution systems and to secure standardization, so as to permit of interchange of power. In such a development, coal should play a large part. It would be a matter for determination by experts whether the development shall be hydro-electric or by super power stations located at the mouth of the mine or in the centre of a group of mines, at some point where there is a supply of water for condensing purposes.

31. Pulverized Coal

A marked feature of modern practice is the burning of coal in powdered form. The advantages are very thorough and complete combustion and quick control, making it equivalent in these respects to an oil fuel or gas. An exponent of this method, who gave evidence before the Commission, stated that the average

increase in efficiency was between 3 per cent and 5 per cent over very efficient mechanical stokers. On the other hand, for small plants of from 500 to 2,000 horse power the additional capital cost may run from 10 per cent to 25 per cent; although this can be reduced somewhat if the plant is originally designed for pulverized coal. With higher ratings, the showing is better for pulverized coal as its use may save a boiler with the corresponding saving in building space, etc. The whole cost of the process of pulverizing and operating the boiler room, from car dumper hopper to ash hopper, runs from 30c to 50c a ton. Coal with much moisture introduces complications, increasing the expense for preliminary drying or increasing the maintenance of the mill and conveyor systems. One user of coal in this form wrote the Commission that all coal burns extremely satisfactorily in powdered form and at a very high efficiency, provided that the moisture in the coal before it enters the pulverizing mills does not exceed 6 per cent. The increasing use of this method of burning coal is of general interest and, insofar as it reduces costs, will have a tendency to increase the market. It may have a further effect on which particular coal is used in that market. Each type of mechanical stoker is especially suited to one kind of coal; whereas the pulverizer is independent of the kind of coal and purchases can be made on a straight B.T.U. basis. For coals with a heavy ash, a mechanical stoker may lose from 10 per cent to 20 per cent of the combustible which goes down with the ash. With such coals, the pulverizer secures much more complete combustion. At present, the largest plant in Western Canada is in connection with the City of Winnipeg Hydro-Electric System, which has 3,300 horse power in three 1,100 horse power units and this plant at the present time is using Alberta coal.

32. Carbonization and By-Products

Since a great deal has appeared recently in the public press with reference to various schemes of carbonization and some such scheme has been held out as a solution of the problems of the Alberta coal industry, the Commission has gone quite fully into this question. Mr. Edgar Stansfield, the Fuel Research Engineer of the Industrial Research Council, has had much experience in this matter, having been engaged on the experiment with Saskatchewan lignite in the Government plant at Bienfait. At the public hearings, Mr. Stansfield stated to the Commission that, if the lignites and possibly the sub-bituminous coals of Alberta were ever to be carbonized, low temperature carbonization would probably be used; but he added that there were other parts of the world, where such an industry could more easily be established; and that it would probably be better for Alberta to let other countries do the experimenting on an expensive operation of that sort. He also summed up the position as to carbonization by saying: "We have so many varieties of coal in the province that if we carbonize the lignites we will get a product which we might have taken almost straight from the earth from some other part of the province."

High Temperature Carbonization: High temperature carbonization is a well-known process, used originally for metallurgical coke and for city gas plants and, now, in the various types of by-product ovens for the production in addition of coke for domestic use, the competition from which has been referred to frequently in this Report.

Coke ovens were installed at a number of mines in the Crowsnest district of the province and supplied metallurgical coke to smelters in British Columbia and Montana. The remains of that market is now served by coke manufactured in British Columbia, nearer to the smelters, and the Alberta ovens are idle. No new developments are reported which will give these Alberta ovens a chance to reopen. None of them were operated as by-product ovens. With the present natural gas supply, there is no local opportunity for manufacturing gas; although, in time, there may be such installations in cities in Saskatchewan and Manitoba. In that event, the Alberta coals will come into competition for gas making with American gas coals as they do now in Winnipeg.

Low Temperature Carbonization: Low temperature carbonization is a comparatively recent idea and is clearly still in the experimental stage. Mr. Stansfield mentioned a huge plant in the United States, constructed with Government assistance, which was supposed to have involved the expenditure of seven and a half million dollars before it was shut down. The Canadian Government's plant at Bienfait was of this type and, similarly, failed to reach commercial success. The latest report of the Scientific and Industrial Research Committee of the British Government (for the year ended 31st July, 1925) gives the cost of the fuel research station there as over £400,000 in capital and maintenance, adding that the production of smokeless fuel, fuel oil, light spirit, lubricants and gas cannot yet be shown to be commercially possible by low temperature treatment of coal. It may be added that the value of the by-products is often over-estimated. The process can be varied to increase the yield of gas, tar or the resulting charred product. Mr. Stansfield called attention to the fact that public reports often give a value for all three, which cannot be obtained simultaneously. He also pointed out that coal tar products are valuable where there are big industries to use them, but, in a country like this, there is the vicious circle that the industries cannot be established without the distillation plants and the plants cannot be established without the industries. With these facts before it, this Commission cannot advocate the attempt to carry on experiments of this sort, necessarily on a small scale, and endorses the view already quoted that Alberta can very well wait until the low temperature process has been commercially proved elsewhere.

33. Briquetting

Briquetting of Alberta coals was carried on for years at the Bankhead Mines of the C.P.R., until those mines closed down, and a briquetting plant has recently been installed at Canmore. Experiments in the briquetting of other coals have been made at

the University laboratories of the Research Council. The chief attention has been paid to the fines from the sub-bituminous stripping pits, which have been a waste product. The experiments carried on have proved quite satisfactory on a small scale and those engaged in them believe that they have determined many of the elements of the process, which will be of value to those contemplating such operations on a commercial scale. A complete statement of the results to that date are contained in the Fifth Annual Report of the Research Council; and, no doubt, further reports will be made as the work progresses. These reports should be consulted by those who are interested in the details.

The fact that the fines from the lignite and sub-bituminous coals are being burned so satisfactorily on chain grate stokers in power plants, together with the more recent development of burning coals in powdered form, has reduced the necessity for briquetting as a general means of marketing such coals. Briquettes make an ideal fuel and, with a cheap enough binder and a satisfactory process, briquetting should increase the marketability of certain coals in the province, which have an undue proportion of fines. It becomes, in practice, a question of the cost of the process against the enhanced value of the product.

CHAPTER VII.

MINE WOKMEN AND LABOR RELATIONS

A—COMPOSITION OF THE WORKING FORCE

1. Numbers Engaged

The Annual Reports of the Mines Branch of the Province give the following statistics:

TABLE 88—*Number of persons employed in the coal mines of Alberta.*

	Average			On Pay Roll at December 31		
Year	Inside	Outside	Total	Inside	Outside	Total
1905	2,000	800	2,800			
1906	2,000	800	2,800			
1907	2,700	900	3,600			
1908	2,681	1,099	3,780			
1909	3,893	1,314	5,207			
1910	4,090	1,728	5,818	4,714	1,808	6,522
1911	4,517	2,172	6,689	4,734	2,312	7,046
1912	4,861	1,800	6,661	5,279	1,981	7,260
1913	5,837	2,231	8,068	6,610	2,253	8,863
1914	6,052	2,118	8,170	5,314	2,092	7,406
1915	4,493	1,952	6,445			
1916	5,536	2,034	7,570			
1917	6,047	2,263	8,310	6,998	2,814	9,812
1918	6,141	2,633	8,774	7,234	2,975	10,209
1919	5,150	2,423	7,573	8,416	3,611	12,027
1920	6,551	3,137	9,688	8,720	3,628	12,348
1921	7,203	2,807	10,010	8,997	3,239	12,236
1922	5,974	2,573	8,547	9,109	3,428	12,537
1923	7,749	2,178	9,927	8,664	2,813	11,477
1924	5,299	2,018	7,317	9,055	3,006	12,061

Of these, the figure for December is explained as being the number of men on the payroll as at the 31st day of that month, which is assumed to be the biggest payroll of the year or very close to that. Gaps in the December figures are due to their absence from the reports of certain years. The average number given for the year is explained as being the number returned for each month of the year added together and divided by 12. These monthly numbers of employees are compiled from a return as to "all persons ordinarily employed in or about the mine including officials, clerks, storekeepers, etc." Naturally, it all depends on the way in which this question is understood by the individual operators making the return. It does not bring in at all the factor of the length of time employed within the month or, in other words, the number of shifts worked and, therefore, cannot safely be used as a basis for calculating average production per employee. Still, for purposes of comparison, as made on the same basis each year the above figures have some value and indicate the fluctuations in the numbers engaged in the industry.

The census of Canada 1911 gives the following for the province of Alberta:

TABLE 89—*Province of Alberta,* 1911. *Number of persons* 10 *years of age and over engaged in gainful occupations.*

	Male	Female	Total
All occupations	149,687	11,923	161,610
Coal miners	3,091		3,091
Laborers in and about coal mines	1,029		1,029
Total mine workers	4,120		4,120
Percentage of all occupations	2.8%		2.5%

The results of the 1921 census by occupations are not yet available.

The above divided by age periods and showing the relation to all Alberta was as follows:

TABLE 90—*Province of Alberta,* 1911. *Number of persons employed.*

	10 to 14 Years	15 to 24 Years	25 to 64 Years	65 Years and Over	Total Males
All occupations	540	39,319	107,374	2,454	149,687
Coal miners	10	637	2,438	6	3,091
Laborers in coal mines	7	344	677	1	1,029
Total mine workers	17	981	3,115	7	4,120
Percentage of all occupations	3.1%	2.5%	2.9%	0.3%	2.8%

For all Canada the division by age periods and the relative importance was as follows:

TABLE 91—*Canada,* 1911. *Number of persons employed.*

	10 to 14 Years	15 to 24 Years	25 to 64 Years	65 Years and Over	Total
All occupations	17,376	620,972	1,619,885	100,580	2,358,813
Coal miners	113	4,886	14,876	199	20,074
Laborers in coal mines	139	2,379	3,075	111	5,704
Total mine workers	252	7,265	17,951	310	25,778
Pctge. of all occupations	1.4%	1.2%	1.1%	0.3%	1.1%

For purposes of comparison, it may be interesting to note that the British Coal Industry Commission of 1919 gave the numbers employed in the mines of Great Britain as 1,100,000 men and youths, representing, with families, between four and five million persons or one tenth of the entire population.

2. Nationalities

The replies to the General Questionnaire to coal operators give the percentages of various nationalities in the working force of

the particular mine. The replies were not complete and the division of nationalities was not uniform; but compiling the information as well as possible and striking a rough average for each coal mining division, the following is the result:

TABLE 92—*Nationality of mine workmen in Alberta by Divisions.*

CROWSNEST DIVISION

	%
British	44
American	1
Slovak	23
French and Belgian	7
Italian	14.5
Russian	2
Other Europeans	8.5

MOUNTAIN PARK DIVISION

British	41.5
Italian	17.5
American	1
Austrian	2
Slovak	11
Ukrainian	10
Serbian	13
Other Europeans	4

MEDICINE HAT DIVISION

British	72
American	2
Slovak	4
Russian	4
Danish	1
Swede	6
Austrian	11

BRAZEAU DIVISION

British	44.5
Italian	25.5
American	2
Ukrainian	4
Austrian	13.5
French and Belgian	5.5
Other Europeans	5

LETHBRIDGE DIVISION

	%
British	40
American	2
Slovak	26
Russian	3
Polak	3
Japanese	3
Italian	15
Other Europeans	8

DRUMHELLER DIVISION

British	61
Ukrainian	11
Finns	1
Russian	5
Slovak	10
Italian	3
American	2
Other Europeans	7

EDMONTON DIVISION

British	60
American	1
Ukrainian	1
Polish	1
Russian	16
Austrian	1
German	3
Belgian	2
Swiss	8
Other Europeans	7

In the above classification, British includes Canadian and is not limited to those from the Old Country; because the information was not complete in this regard from the various mines. It will be seen, contrary perhaps to the general idea, that those of British nationality predominate throughout. It is impossible to consolidate these into one table for the whole province, because the number of workmen involved in each percentage class is not accurately known so as to give a properly weighted result for the total.

The census of Canada for 1911 does not divide nationalities beyond the two general classes of Canadian-born and immigrants. On this basis the position in Alberta in 1911 is shown by the following:

TABLE 93—*Nationality of mine workmen in Alberta*, 1911, *compared with all occupations.*

	Canadian-born		Immigrants		
	Number	Percentage	Number	Percentage	Total
All occupations, male.....	45,494	30.4%	104,193	69.6%	149,687
Coal miners	317	10.2%	2,774	89.8%	3,091
Laborers in coal mines....	75	7.3%	954	92.7%	1,029
Total mine workers....	392	9.5%	3,728	90.5%	4,120

The relation of this to the coal mining industry of Canada as a whole, in the year 1911, is shown by the following:

TABLE 94—*Nationality of mine workmen in Canada*, 1911, *compared with all occupations.*

	Canadian-born		Immigrants		
	Number	Percentage	Number	Percentage	Total
Coal miners	8,526	42.5%	11,548	57.5%	20,074
Coal mine laborers	2,570	45.1%	3,134	54.9%	5,704
Total mine workers....	11,096	43 %	14,682	57 %	25,778

For purposes of comparison, it will be interesting to give from the United States census of 1920 their classification according to nativity:

TABLE 95—*Country of birth of mine workers in U. S. A.*, 1920.

Country of Birth—	Number	Per cent
Total all countries.....	525,152	100.0
United States (white).....	310,719	59.2
United States (colored).....	42,443	8.1
Foreign countries	171,990	32.7
Countries of Birth of Foreign-born—		
Italy	37,228	7.1
Austria	24,582	4.7
Hungary	14,002	2.7
Poland	22,239	4.2
Russia	14,220	2.7
France	2,790	0.5
Slovakland	13,472	2.6
Bohemia-Moravia	2,118	0.4
Jugo-Slavia	9,393	1.8
British Isles	17,297	3.3
Germany	6,001	1.1
Bulgaria	400	0.1
Greece	1,016	0.2
Sweden	1,850	0.3
Belgium	1,443	0.3
Syria	130	(*a*)
Roumania	375	0.1
All others (*b*).....	3,434	0.6

(*a*) indicates less than 0.1 per cent.

(*b*) any country in which less than 100 of the mine workers were born is not listed separately but grouped with "All others."

3. Classification of Mine Workmen

The following table is based on information contained in the Mines Report for 1924:

TABLE 96—*Province of Alberta, classification of mine workmen at 31st December*, 1924.

	Bituminous Mines		Sub-Bituminous Mines		Lignite Mines		Total All Mines	
Below Ground:	No.	%	No.	%	No.	%	No.	%
Officials	139	4.1	27	3.2	265	3.4	431	3.6
Hand cutters	1,373	40.1	150	17.6	1,343	17.3	2,866	23.8
Machine cutters			33	3.9	492	6.3	525	4.4
Machine loaders			134	15.7	2,494	32.	2,628	21.7
Horse haulage employees	195	5.7	20	2.3	641	8.2	856	7.1
Mechanical haulage employees	182	5.3	17	2.	129	1.7	328	2.7
Ventilation employees	46	1.3	3	.4	52	.7	101	.8
Road makers	50	1.5	8	1.	164	2.1	222	1.9
Timbermen	132	3.9	14	1.6	217	2.8	363	3.
Pumpmen	16	.5	1	.1	44	.6	61	.5
Other employees	360	10.5	15	1.8	299	3.9	674	5.6
Total below ground	2,493	72.9	422	49.6	6,140	79.	9,055	75.1
Above Ground:								
Administration	25	.7	16	1.9	100	1.3	141	1.2
Foremen and clerks	96	2.8	19	2.2	120	1.5	235	1.9
Screenmen and loaders	200	5.8	85	9.9	587	7.5	872	7.2
Engine men	48	1.4	33	3.9	138	1.8	219	1.8
Firemen	50	1.4	20	2.3	77	1.	147	1.2
Machinists	42	1.2	9	1.	41	.5	92	.8
Carpenters and masons	36	1.	18	2.1	31	.4	85	.7
Other mechanics	59	1.7	16	1.9	53	.7	128	1.1
All other employees	340	10.	212	24.7	458	5.9	1,010	8.4
Surface haulage	39	1.1	4	.5	34	.4	77	.6
Total above ground	935	27.1	432	50.4	1,639	21.	3,006	24.9
Grand total	3,428	100%	854	100%	7,779	100%	12,061	100%

Percentages are of grand total.

The Annual Report of the Mines Branch gives similar information as to the numbers of each class of workman for each coal area in the province.

4. Too Many Mine Workmen

On the facts before it, the Commission agrees with what was stated by many witnesses that there are too many mine workmen and that, in consequence, the individual workman suffers. This question naturally comes up here in the discussion of numbers employed in the industry and will be referred to again in the summary of general problems. Meantime it will be well to examine some of the causes of this condition of affairs. As was very

well stated by one of the witnesses, the struggle to get into the mines indicates that a general economic law is at work. In the past, the wages in the mines have been higher than on the farms or in any other of the general occupations in the province; with the natural result that many left the other occupations in favor of work in the mines. The evidence is that there is a surplus of labor at the mines, not only each autumn, but continuously. Since the end of the war there has been a special reason for this condition. One witness stated that District 18 sent about 2,000 mine workers to the war and their places were taken by Galicians, Italians and Slavs attracted by the high wages. When the war terminated, most of the old mine workers returned and got their jobs back; but the foreigners who had entered the industry found it attractive and attempted to remain in it.

This surplus of labor in the mines, coupled with the surplus of mine capacity referred to elsewhere, results in ability to meet a peak demand for coal and thus encourages the present hand to mouth system of ordering coal. The trouble can only be remedied by co-operation on the part of all concerned. The consumer and dealer must spread their demands over a longer period; then, with fewer workmen engaged in the industry, there will be steadier work and better returns for all of them. It is interesting to note that the U.S. Coal Commission found a similar condition. In the part of their report dealing with irregularity of operation, it is stated that because of over-development—too many mines and too many miners—the great expansion of the market has simply meant irregular employment for more miners.

In addition to the improvement that should come from more stabilized marketing conditions, which will be discussed in greater detail elsewhere in this report, several attempts have been made to remedy this condition. The U.M.W. of A., District 18, tried to limit membership in their organization by imposing an initiation fee of $50.00 on "non-practical miners"; but the Commission is informed that this attempt failed by reason of the operators declining to recognize a check-off of more than $5.00 a month. The question of certificates as to competency will be discussed in Chapter VIII on Legislation. Meantime, even in highly organized districts, there are no qualification limitations corresponding to those in many of the organized trades; indeed, for some reason, in spite of the skill and experience required, mining is said not to be recognized as a "trade." As will be shown later, the disparity in wage scales between mining and other occupations in the country has lately been greatly diminished. The fact that more moderate wages are being paid, coupled with irregularity of employment, will probably do more than anything else to check this condition of having too many mine workmen endeavoring to make a living out of the industry.

As quoted at the opening of this chapter, the Annual Report of the Mines Branch gives for December, 1911, the total number of persons employed as 7,046. In contrast with this the census figures for 1911 give a total of mine workers in the province of Alberta of 4,120. The difference can only be explained as made

up of men working in the mines in December, 1911, who, for census purposes, gave something else as their regular occupation. If this be correct, in December, 1911, out of a total of 7,046 there were 2,926 who were only casually employed in the mining industry. This is over 40% of the total.

B.—OPERATORS' ORGANIZATIONS

5. Western Canada Coal Operators' Association

Although the Western Canada Coal Operators' Association has recently disbanded, it will be well to put on record an account of its constitution and history. Formed in 1906 under a slightly different name, it functioned for a period of nearly 20 years and then passed out of existence on the 27th November, 1925. The exact nature of this Association and its purposes are described in its constitution, the full text of which is Exhibit No. 23 (not printed) to the oral evidence, and which may be summarized as follows:

The constitution of the Western Canada Coal Operators' Association recites the desirability of a central association and resolves that the undersigned sub-district associations associate themselves by the written articles of agreement "and in all matters pertaining to this association agree to be fully bound thereby."

ARTICLE 1—*Association*: "The Western Canada Coal Operators' Association," with offices at Calgary.

ARTICLE 2—*Objects*: To protect members in rights and privileges under laws of Alberta, British Columbia and Dominion of Canada as employers of labor and to safeguard and promote the interests of the coal industry; to promote stability of business and steady employment of labor, whether organized or unorganized, by encouraging friendly relations and to discourage lockouts, strikes and boycotts, etc.

ARTICLE 3—Association divided into the following sub-districts:

Sub-district No. 1—Southeastern British Columbia.

Sub-district No. 2—The Crowsnest Pass east of the Summit.

Sub-district No. 3—The Lethbridge-Taber field.

Sub-district No. 4—All mines west of Calgary on the Canadian Pacific Railway, together with all mines west of Red Deer on the Canadian Government Railway.

Sub-district No. 5—The Drumheller-Wayne field.

Sub-district No. 6—All mines west of Edmonton on the Grand Trunk and Canadian Government Railways.

Sub-district No. 7—All mines in the immediate vicinity of Edmonton.

Provision is made for two or more of the sub-districts to amalgamate into a local association without affecting representation in the central association; the local association to have the use of the central association without additional cost, providing that the central association shall have priority.

ARTICLE 4—Each sub-district to vote on the basis of one vote for each 100,000 tons or major fraction thereof by accredited representatives, not exceeding in number the said votes; at the annual meeting or as soon as possible thereafter the sub-districts name representatives and alternates or proxies for the ensuing year.

ARTICLE 5—Association to have exclusive power to deal with the making of general agreements with representatives of labor organizations within the territory of the Association and of defining conditions for hours of labor and deciding on recognition of labor unions; the settlement of all disputes involving interpretation of general agreements; and taking action upon legislation or proposed legislation whether provincial or federal.

ARTICLES 6 TO 10—Deal with applications for membership, the fee being equivalent to $500.00 per sub-district assessed according to the tonnage mined for the previous calendar year (the minimum tonnage for membership purposes being 50,000 tons), and assessments by the Association or the Executive Committee on a similar tonnage basis.

ARTICLE 11—Provides that, by joining the Association, each sub-district agrees to maintain and observe the constitution "and all contracts entered into hereunder on its behalf." Any violation of the constitution or any such contract may be a cause for expulsion, after charges are made and proven, by a majority vote of the Association.

Section 2 of Article 11 reads: "In recognition of the fact that this is purely a voluntary organization designed, among other things, to negotiate agreements acceptable to the majority interests, without undue prejudice to the rights of the minority, it is therefore the right and privilege of any sub-district, dissenting from any agreement or contract made or executed by the Association, to withdraw from the Association by filing written notice of such withdrawal with the Secretary not more than fifteen (15) days after the making or execution of said contract."

ARTICLES 12 TO 14—Deal with the calling of meetings, quorums and election of officers consisting of a President, First and Second Vice-Presidents to serve without compensation, and a Secretary-Treasurer or a Secretary and a Treasurer.

ARTICLE 15—Deals with the powers of the President, including the appointment of a legislative committee of two members for each province, a railroad and transportation committee of three members, a press committee of three members and an auditing committee of one member.

ARTICLE 16—Defines the duty of the Secretary.

ARTICLE 17—Establishes an Executive Committee including the President and Vice-Presidents so chosen as to consist of two representatives from each sub-district.

ARTICLES 18 AND 19—Provide for the calling of meetings of the Executive Committee and give it all the powers of the Association, except electing officers and amending the constitution and except the power to repeal any action of the Association. This Executive Committee constitutes the General Scale Committee of the Association, their action to be approved in general meeting. As a General Scale Committee all present must be unanimous on any vote.

ARTICLE 20—The Executive Committee may employ a Commissioner or Commissioners.

The remaining articles deal with amendments to the constitution and order of business.

In 1923, the membership of the Association consisted of the following mines, several of which had ceased to belong to it some time prior to its dissolution:

TABLE 97—*List of the membership of the Western Canada Coal Operators' Association in Alberta, together with their tonnage output for 1923.*

Sub-District No.		Name	Address	Tonnage 1923
2	1.	McGillivray Creek C. & C. Co., Ltd.	Coleman	427,363
	2.	International C. & C. Co., Ltd.	Coleman	256,491
	3.	West Canadian Collieries, Ltd., Greenhill	Blairmore	285,067
	4.	West Canadian Collieries, Ltd., Bellevue	Blairmore	339,068
	5.	Hillcrest Collieries, Ltd.	Hillcrest	279,042
3	6.	C.P.R. Galt Mines	Lethbridge	363,160
4	7.	Canmore Coal Co., Ltd.	Canmore	264,447
	8.	Brazeau Collieries, Ltd.	Nordegg	493,378
6	9.	Mountain Park Collieries, Ltd.	Mountain Park	185,865
	10.	Luscar Collieries, Ltd.	Luscar	151,102
	11.	Cadomin Coal Co., Ltd.	Cadomin	297,507
5	12.	Gibson Collieries, Ltd. (in Liqn. 1924)	Drumheller	38,888
	13.	Alberta Block Coal Co., Ltd.	Drumheller	53,433
	14.	Hy-Grade Coal Co., Ltd.	Drumheller	121,295
	15.	Mid-West Coal Co., Ltd.	Drumheller	60,480
	16.	Midland Collieries, Ltd.	Midlandvale	50,461
	17.	Atlas Coal Co., Ltd.	Drumheller	99,277
	18.	Newcastle Coal Co., Ltd.	Drumheller	103,984
	19.	Elgin Coal Co., Ltd.	Drumheller	86,438
	20.	Western Gem Coal Co., Ltd.	Drumheller	73,096
	21.	J. D. Thomas Coal Company	Nacmine	8,322
	22.	Western Commercial Co., Ltd.	Wayne	51,332
	23.	Jewell Collieries, Ltd.	Wayne	50,954
	24.	Rosedeer Coal Mining Co., Ltd.	Wayne	91,223
	25.	Great West Coal Co., Ltd.	Aerial	51,886
	26.	Newcastle Jr. Mining Co., Ltd.	Drumheller	105,676
		Association total tonnage, year 1923		4,389,235
		Total tonnage of province, year 1923		6,866,923

Association tonnage about 70% of total Alberta tonnage.

The last officers of the Association were:

John Shanks, Brazeau Collieries, Nordegg, President.

George Kellock, McGillivray Creek Coal & Coke Co., Limited, Coleman, First Vice-President.

William McVeigh, Elgin Coal Co., Ltd., Drumheller, Second Vice-President.

Robert M. Young, Secretary-Treasurer and Commissioner.

As will appear in the next section of this chapter, the United Mine Workers of America made their appearance in Alberta and Southeastern British Columbia in the year 1903, this territory forming District 18 of that organization. The Western Coal Operators' Association, as it was then called, was formed principally to negotiate wage scales and working agreements with the U.M.W. of A., District 18, the territory covered by both organizations being the same. Each was similarly organized into sub-districts, the sub-district associations of operators corresponding exactly with the sub-districts of the U.M.W. of A., District 18.

In May, 1925, when the Commission was sitting in Calgary, the President of the Western Canada Coal Operators' Association said that the organization was still in existence; but several members had dropped out owing to the fact that their employees had withdrawn from the U.M.W. of A. "The operators thought that they could not very well remain members of an Association, which had an agreement with the U.M.W. of A., when their workmen had broken away from the U.M.W. of A." His particular colliery was out of the Association at the time; and his resignation was in the hands of the Association. A fuller discussion of this feature will be given under the heading of agreements later in this chapter. Meantime it should be noted that, if a member broke the agreement that had been signed by the Association on his behalf, it had the power to expel him; and this had in fact been done. On the financial side, the fees and assessments, provided for by the constitution, were used to pay the salaries and expenses of the Commissioner's office, including his salary, the salary of one stenographer and rent, travelling expenses, legal fees, etc. It will be noted that the different collieries paid into the sub-districts and the sub-districts then paid into the central association.

It was stated most emphatically by several witnesses that neither the sub-district association nor the central body had anything whatever to do with the fixing of prices on coal. It would appear that the respective members were in keen competition for business and the Commission finds no reason to doubt that the activities of the Association were limited to the objects above noted. Meetings of sub-district organizations might discuss other matters of particular interest to their sub-districts. It appeared that, for example, the Secretary of the Red Deer Valley Coal Operators' Association—sub-district No. 5—was concerned in the handing out of the allotments made to the different mines for the shipment of coal to the Ontario market. Incidentally, there was originally a local organization in the Drumheller field which later joined up and became sub-district No. 5 of the main association.

6. Northern Alberta Coal Operators' Association

The agreement of July 7, 1923, which is referred to later in this chapter, was made between the Northern Alberta Coal Operators' Association and the Edmonton & District Miners' Federation. The special schedules to that agreement concern:

Clover Bar Mines.
Bush Mine Coal Co., Ltd.
Humberstone Mines, Ltd.
Fraser-McKay Collieries, Ltd.
Great West Coal Co., Ltd.
Marcus Coal Mines, Ltd.
Penn Mine Coal Co., Ltd.
Edmonton Collieries, Ltd.

Some of these Companies have since gone out of business and the others, in reply to the question: "What operators' associations do you belong to?" replied: "None." From this it appears that membership in the above association is not taken very seriously. Apparently it comes together only at the time of the negotiating of an agreement.

Need for Operators' Organizations—The quotation given above from the President's evidence states that the various collieries withdrew from the Association as a consequence of their workmen withdrawing from the U.M.W. of A. This was, perhaps, inevitable but the Commission regards the passing out of existence of the Western Canada Coal Operators' Association as a retrograde step and believes no time should be lost in forming some organization or organizations of operators to take its place. It is true that, at the moment, the labor organizations of the province are almost equally disorganized; but, in all probability, this is only a passing phase and, in some form or other, the mine workmen will get together for the furtherance of their common interests. For the sake of the industry as a whole, it is highly important that there should be effective organization by the operators, so as to bring to bear on their common problems the combined experience, knowledge and ability of all. This is particularly necessary in relation to their labor policy. The office of Commissioner is considered of increasing importance and too great care cannot be exercised in the choice of a man to fill this position. In the negotiating of new agreements and the adjusting of differences under existing agreements, a Commissioner, who understands the industry and also the aspirations and limitations of union leaders, can do an immense amount to secure the smooth running of the industry.

Judging from some of the expressions used by witnesses before the Commission, there are certain fields in the province, particularly, where such a Commissioner could do a great deal to give the operators a sympathetic appreciation of the problems of their workers.

The operators of this province cannot help themselves, in relation to the industry, in an effective way, until they recognize the need for co-operation. There are several types of operators

whom it is difficult to get to combine for common purposes. There are the large operators who prefer independent action; there are the operators of the selfish type who would like to take the benefits but wish to avoid the burdens of the Association; but whatever be the difficulties in the way, unless and until the operators of the province succeed in uniting, they can only blame themselves if legislative and administrative action seems to be taken without due regard for their interests.

C.—LABOR ORGANIZATIONS

7. U.M.W. of A., District 18

The United Mine Workers of America, the leading organization of mine workers in the United States, first made its appearance in this province and the neighboring part of British Columbia in the year 1903. The headquarters were then in Fernie but were later removed to Calgary. Previous to this in B.C., there was a so-called "Western Federation of Miners" which included metal as well as coal miners; but there was no labor organization in the Province of Alberta.

The constitution of District 18, U.M.W. of A., as drafted and compiled in October, 1923, effective January 1, 1924 (by Article 11), may be very briefly summarized as follows. The preamble is quoted in full:

> "There is no truth more obvious than that without coal there could not have been such marvellous social and industrial progress, as marks present-day civilization.
>
> "Believing that those, whose lot it is to toil within the earth's recesses, surrounded by peculiar dangers and deprived of sunlight and pure air, producing the commodity which makes possible the world's progress, are entitled to protection and the full social value of their product, we have formed District 18, 'United Mine Workers of America,' for the purpose of establishing by lawful means, the principles embraced in the body of this constitution."

ARTICLE 1—*Objects*: To improve the material, intellectual and moral condition of the toilers in and around the mines. An invitation is extended to all without regard to race or color. The membership consists of all employed in and around coal mines, coal washers and coke ovens in Eastern B.C. and Alberta; to secure the preservation of health and life; to endeavor to secure laws in the interests of the workers; to demand that six hours shall constitute a day's work and that all coal be weighed before being screened on the basis of 2,000 lbs. to the ton; "to use every means to secure the full social value of our product;" "to concur with the aim and object in the future of establishing a central co-operative wholesale society in Canada."

ARTICLE 2—Jurisdiction over all local unions in District 18, subject to the laws and policies of the International Union.

ARTICLE 3—Officers: President, Vice-President, Secretary-Treasurer, International Board Member, Auditor and three Tellers. "The Executive Board shall consist of the Officers and seven Board Members to be elected by the Local Unions in the following sub-districts." (See the seven sub-districts described under Western Canada Coal Operators' Association.) Wages and expenses of Board Members to District and Special Conventions to be paid by the district. Term of all Officers and Board Members two years.

The Executive Board, in the intervals between Conventions, to direct affairs. The Board has power to draw upon and use such funds as it deems necessary but only with the consent of a majority of the Board. (The constitution goes into great detail as to the handling of questions pertaining to wages and conditions, disputes and grievances and the general powers and conduct of the Officers.)

Executive Board has power to levy and collect assessments "but no assessment levied by the District Executive Board shall be collected for more than two months unless authorized by a referendum vote of the members."

"Any Local Union having a dispute shall, if necessary, send a representative to attend on their behalf, said representative to be paid by the Local Union affected, and shall have seat and voice until the case is finally settled."

ARTICLE 4—Initiation fee $10.00 for practical miners and surface workers; $50.00 for non-practical miners. Fees 50c per member per month to the International; 35c per member per month to the District; 25c per member per month for Strike and Defense Fund.

"Strikes shall not be called unless ordered by a ballot of the members, and then only by a two-thirds majority of the votes cast."

ARTICLE 5—deals with salaries of District Officers, wages and expenses of delegates to District Conventions.

ARTICLE 6—deals with nominations and elections.

ARTICLE 7—deals with District and Special Conventions. It provides for a biennial convention to be held on the third Monday in October, 1925, and thereafter in October in each alternate year.

ARTICLE 8—deals with duties of Local Unions and Local Union officials.

Section 1: "It shall be the duty of the Local Union to appoint a committee to investigate all accidents in and about the mines and make a report of the same in detail to the Local Union."

Section 2: A Local Union, finding that The Coal Mines' Regulation Act is being violated, shall notify the District Secretary-Treasurer and the Chief Mine Inspector of the province. "Should the Local Union find that such violation of the Act

would endanger the lives of the members working in that particular mine, the Local shall immediately order the men to suspend work until the matter has been rectified." This article contains a number of provisions and fines regarding working on holidays or Sundays, taking special contracts in mines, holding two jobs, etc.

Section 7: "District Officials shall use every endeavor to promote the welfare of the workers by dealing with the questions of political economy, when visiting Local Unions or at any other public gathering which they may be privileged to address, in order that the day may be hastened when we shall enjoy the full social value of our product, as called for in our Preamble."

ARTICLE 9—calls for the local unions to forward resolutions one month prior to the Biennial Convention.

ARTICLE 10—states that the district constitution is not binding if it conflicts with the International Constitution. This article also deals with revoking of charters, etc.

ARTICLE 11—"This Constitution shall become effective from January 1, 1924, until December 31, 1925, and can be amended only by a majority vote of the delegates attending the Regular District Biennial Convention."

The officers of District 18, U.M.W. of A., have been as follows:

Year	President	Vice-President	Sec.-Treasurer
1903	Frank Sherman	John Galvin	J. Howbrook J. A. McDonald (1907 to 1909)
1910	Wm. Powell	Clement Stubbs	A. J. Carter
1913	C. Stubbs	J. O. Jones	A. J. Carter
1914	John Smith	Wm. Graham	A. J. Carter
1915	Wm. Phillips	Wm. Graham	A. J. Carter
1916	Wm. Graham	Thos. Biggs	A. J. Carter
1917	Thomas Biggs	P. M. Christophers	Ed. Browne
1918	P. M. Christophers	Alex. McFagan	Ed. Browne

(From 1919 to 1921, as a result of the O.B.U. movement, a Commission of three American officers of the International Organization was placed in charge of District 18.)

1921	C. Williamson	Wm. Ryan	R. Peacock
1922 to 1925	Wm. Sherman	Wm. Ryan	R. Peacock

1925 R. Livett appointed to take charge by International Office of U.M.W. of A.

District 18 made its agreements from 1903 to 1906 with individual operators; from 1907 to 1925, with the Western Canada Coal Operators' Association under its various names, and now, what is left of District 18 is making agreements once more with individual operators. The biggest membership of District 18 was from about 1918 to 1920 and the figure given to the Commission is about 10,000 members at that time. Just before the recent

trouble in its ranks, the membership was probably about 7,000 but at the present time it is estimated to be in the neighborhood of 1,500.

It was about the 1st September, 1925, that Wm. Sherman resigned the office of President of District 18. Wm. Ryan, the Vice-President, had already resigned and the resignation of R. Peacock, the Secretary, took effect later in the month. This left the affairs of the District in the hands of International Representative Robert Livett and International Board Member R. McDonald, the latter ceasing to hold office in November, 1925. It is difficult, among the vehement and conflicting reasons given for the trouble in the ranks of the U.M.W. of A., to pick out the true causes of it. It would appear, however, that the officers failed to recognize the necessities of the case, prolonging the strike of 1924 beyond the time when anything was to be gained by a struggle and finally forcing through a settlement which could not be maintained. When the membership in the Crowsnest Pass accepted lower rates of pay, the district endeavored to maintain its scale for the sake of its members in the Drumheller and Mountain Park districts. Finally, the officials made a contract with the operators in the Red Deer Valley District, in a way which the membership there claimed to have been contrary to the constitution, and the U.M.W. of A. became disorganized in that district also. At the present time, the U.M.W. of A. has agreements with a certain number of mines in the province but the locals are understood not to be very active.

Attempts have been made and are, no doubt, being continued, to reorganize the miners of the province under the International Organization. In connection with the controversy, in the newspapers and otherwise, over the respective merits of the rival unions, the following information was given out, by the Executive of District 18, as to the financial relations between this district and the International: For an 18 months' period, the Atlas Local at Drumheller contributed $3,900.00 to the International and, during the 1924 strike, received $21,000.00. In nine months, the Nova Scotia Locals sent $11,000.00 to Indianapolis and, from March 6 to June 30, 1925, received in strike pay, $66,800.00. From 1922 to the time of the 1924 strike, District 18 of the U. M.W. of A. paid $30,000.00 in the per capita levy to headquarters and, during the 1924 strike, received $127,500. In addition the International pays the salaries of the International representative and the International Board member. The opinion has been expressed to the Commission that, because the balance in a financial way has always been so much in favor of Canada, there is a strong element at U.M.W. of A. headquarters against maintaining districts in this country. The fluctuations, between this policy and the desire to have the organization represented in the industry on both sides of the line, may be the explanation of the apparent variations in the degree of interest shown by International officers in the affairs of this district.

8. Edmonton and District Miners' Federation

The Edmonton and District Miners' Federation got a charter from the Canadian Federation of Labor in February, 1923. They have one main local in the Edmonton District, with five mines in the summer and an additional mine operating in the winter time, and they also have a local at Big Valley. In March, 1925, the membership was a little over 500, running up to about 850 in the winter. The head office is at Beverly near Edmonton. This organization came into being after an extended strike, conducted by the U.M.W. of A. to prevent the mine operators establishing a differential in wages. The President is William Walker and the Secretary-Treasurer, R. Livingstone Smith. Their present agreements with the operators will be referred to in the discussion of agreements.

9. Mine Workers of Canada

The mines in the Crowsnest Pass, which broke away from the U.M.W. of A., are, to some extent at least, uniting their forces under "The Mine Workers of Canada," the idea being, with this organization, to parallel the old District 18 of the U.M.W. of A. The present organization includes the workmen in one mine at Blairmore, one at Bellevue, two at Coleman, one at Lethbridge, one at Canmore and one at Brazeau, with claims to growing membership in other places. As all of these mines at the present time have individual agreements between the operators and their own workmen, the Mine Workers of Canada cannot function as a district organization until the time of renewal of those agreements except by interfering with the present arrangements.

The officers are:

Dai Morgan, President,
John Stakaluk, Vice-President,
J. D. Gillis, Secretary,

and the offices are in Calgary.

10. Red Deer Valley Miners' Union

During the summer of 1925, the Red Deer Valley Miners' Union was formed with H. G. Fletcher as President, R. Hall, Vice-President, and J. Jenkins, Secretary, and has been competing with the remainder of the U.M.W.A. organization for the support of the mine workers in the Drumheller and neighboring fields. The officers, in a statement to the press, say their organization was formed as a protest against the way in which the District 18 officials arrived at a settlement with the operators, without consultation with the membership. At that time, July, 1925, they claimed a membership of 90% of the miners in the valley but, if that claim was ever justified, it is evident that they have lost ground since.

11. Industrial Workers of the World

The Industrial Workers of the World have recently established offices in Wayne and Drumheller and have been active in pushing their organization among the mine workmen in those districts.

12. One Big Union

The One Big Union still has supporters among the mine workmen; but no definite organization is in effect among the mine workers of the province at the present time.

13. Non-Union Workmen

There are a great many mines in the province without any acknowledged form of organization, where the workmen, through a committee, meet the management and agree on wages and working conditions. In the Edmonton district, for instance, at the time of the session of the Commission, there was about an even break in numbers between the various unionized mines and non-union mines; and about the same relation obtained in the output.

Although given every opportunity to do so, none of the workmen at such mines came before the Commission to give their views. The Commission, therefore, is unable to judge whether the men would agree with the following account, given by the operators. The claim by the operators of these mines is that, except when efforts are made from the outside, from time to time, to organize their men under some one of the existing unions, their relationship is entirely satisfactory. One of the operators testified that, since 1921, when their men ceased to belong to the union, there had been no strikes and no friction between the operator and the employees. Another operator, running two mines, one of which is unionized and the other not, stated that at the non-union mine, in nine years, they had had nothing but the best of relations with the men and no strikes. This operator's view is expressed as follows: "Our experience teaches us that, where there is no organization wedged in between ourselves and our men, interested in fomenting trouble, conciliation and arbitration boards, advisory councils and such absorbents of time and money are unnecessary to the welfare of the men, the operator or the public."

It remains an open question, however, to what extent the workmen in non-union mines are benefiting from the struggle made by the unions to improve conditions. The leaders of the union movement would say that they were really sharing the advantages gained, without sharing the cost and trouble of securing them.

D.—WAGES, WORKING CONDITIONS AND AGREEMENTS

14. Agreements, Western Canada Coal Operators' Association and District 18, U.M.W. of A.

The Commission secured from Robert M. Young, then Secretary of the Western Canada Coal Operators' Association, very valuable evidence as to the history of wages and working agreements in District 18, U.M.W. of A. This evidence was corroborated by union officials and others. Mr. Young put in, (Exhibit No. 20 to the oral evidence—not printed), a chart of wage scales in effect in the district, from 1909 to 1920, and (Exhibit No. 21 to the oral evidence—not printed) a memorandum on agreements from 1916 to 1920. The condensed account given below is taken partly from the evidence and partly from the exhibits.

Agreements were made as follows:

(1) Agreement, dated 4th May, 1907, between the U.M.W. of A., District 18, the Western Coal Operators' Association and seven individual coal companies, effective to March 31, 1909. (Exhibit No. 22 A—not printed.)

(2) Agreement dated 30th June, 1909, between the U.M.W. of A., District 18, and the Western Coal Operators' Association, effective to 31st March, 1911. (Exhibit No. 22B—not printed.)

(3) Agreement dated 17th November, 1911, between U.M.W. of A., District 18, and the Western Coal Operators' Association, effective to 31st March, 1915. (Exhibit No. 22C—not printed.)

(4) Agreement dated 31st March, 1915, between District 18, U.M.W. of A., and the Western Coal Operators' Association, effective to 31st March, 1917. (Exhibit No. 22D—not printed.)

(5) Official order of W. H. Armstrong, Director of Coal Operations, dated 27th July 1917, and supplementary order by Mr. Armstrong, dated 31st July 1917, directing the operation of the mines in District 18 according to the tentative agreement of March, 1917, but with certain specified increases and other changes. These were made effective, in the first instance, to 31st March 1919, and were continued indefinitely by mutual agreement of the parties. (Exhibit No. 22E—not printed.) There was also an award by R. F. Green, Special Commissioner for the Dominion Government, and various awards of the Cost of Living Commission, appointed under the Armstrong order of July 27, 1917.

(6) Agreement dated 10th June 1920, between District 18, U.M.W. of A., and the Western Canada Coal Operators' Association, retroactive to the 1st April 1920 and effective to 31st March 1922. (Exhibit No. 22F—not printed.)

(7) Agreement dated 23rd August 1922, between the Western Canada Coal Operators' Association and the U.M.W. of A., District 18, effective to the 31st March, 1923. (Exhibit No. 22G —not printed.)

(8) Agreement dated 14th March 1923, between the Western Canada Coal Operators' Association and the U.M.W. of A., District 18, effective to the 31st March 1924. (Exhibit 22G—not printed.)

(9) Agreement dated 10th October 1924, between the Western Canada Coal Operators' Association and the U.M.W. of A., District 18, effective to the 31st March 1927, unless sooner terminated by six months' notice in writing. (Exhibit No. 22G—not printed.)

Of the above, only the first agreement was signed by the constituent members of the Western Coal Operators' Association, as well as by the officers of that Association. The subsequent agreements are simply signed by the officers of the Association and the District Officers of the union. Appended to Agreement No. (1) are individual agreements between the various Companies and District 18, dealing with local contract prices and special conditions. In Agreements Nos. (2), (3), (4) and (6), these local conditions are included above the signatures of the parties; and the agreements are signed, as stated, only by the respective officers. Agreements Nos. (7), (8) and (9), as printed and submitted, are very brief documents with only a blanket reference to local conditions.

15. Wages Changes 1909 to 1925

TABLE 98—*Daily rates of pay and hours of labor. For simplicity only three classes, namely: "miners," "inside labor not classified" and "outside labor not classified" are shown.*

	Miners on Day Work		Unclassified Inside Labor		Unclassified Outside Labor	
	Rate	Hours	Rate	Hours	Rate	Hours
Agreement No. 2, dated 30th June, 1909	$3.00	8	$2.50	8	$2.25	10
Agreement No. 3, dated 17th November, 1911	3.30	8	2.75	8	2.47	10
Agreement No. 4, dated 31st March, 1915	3.30	8	2.75	8	2.47	10
War Bonus 16th Aug., 1916	3.55	8	3.02	8	2.75	10
Govt. Bonus 16th Nov., 1916	3.84	8	3.31	8	3.04	10
Tentative Agreement, April 1, 1917	3.80	8	3.23	8	2.94	9
Green Award effective (retroactively) from April 1, 1917	4.08	8	3.47	8	3.16	9
High cost of living commission bonuses (see footnote)	5.00	8	4.39	8	4.08	9
Armstrong Order No. 124 reducing hours 1st April, 1919					4.08	8
Armstrong Order No. 139, December 1, 1919	5.70	8	5.00	8	4.65	8
Agreement No. 6 dated 10th June, 1920 (retroactive) effective April, 1920-22	6.35	8	5.58	8	5.18	8

	Miners on Day Work		Unclassified Inside Labor		Unclassified Outside Labor	
	Rate	Hours	Rate	Hours	Rate	Hours
Supplementary Agreement October 25, 1920	7.50	8	6.89	8	6.58	8
* Agreement No. 7, 23rd August, 1922	7.50	8	6.89	8	6.58	8
Agreement No. 8, 14th March, 1923	7.50	8	6.89	8	6.58	8
Agreement No. 9, 10th October, 1924	6.56	8	6.03	8	5.76	8
New scale Crowsnest Pass Mines, effective at various dates in April, 1925....	5.40	8	4.45	8	4.20	8

* This agreement provided that 15% be deducted but this was restored almost immediately to conform with the rates in the United States.

Footnote: The high cost of living bonuses, included in the above rates, were as follows:

Order No. 14, effective August 1, 1917.....	20c	per shift
Order No. 24, effective December 1, 1917.....	14c	" "
Order No. 41, effective April 1, 1918.....	20c	" "
Order No. 80, effective August 1, 1918.....	25c	" "
Order No. 97, effective December 1, 1918.....	13c	" "
	92c	

The history of the negotiation of the various agreements and the resulting wage changes, for which the Commission is largely indebted to Mr. Young, were, briefly, as follows: The agreement of November 1911 gave a general flat increase of 10% to all classes of day wages. The agreement of 31st March 1915 renewed the existing rates, effective to 31st March, 1917; but, in 1916, the representatives of the men made a demand for a readjustment which, after some negotiations, was conceded on the basis given above under the heading of War Bonus of 1916. This was a supplementary agreement, dated 14th August 1916, which granted the following increases:

5% on all contract mining rates.
8% on all contract coke oven rates.
12½% on all day wage rates under $2.40.
10% on all day wage rates between $2.47 and $3.03.
28c on day wage rate of $2.47.
27c on day wage rate of $3.03.
25c on day wage rate above $3.03.
30c per day on miner's minimum rate.

There was a further demand, based on the claim that the cost of living had gone up very considerably, and, on the 16th November 1916, the Government bonus was granted of $1.75 per week, added to all rates on the basis of 29c per shift. Negotiations were entered into, under the terms of the Agreement expiring 31st March 1917, and a new Agreement was made between the officers of the Union and the representatives of the Association, which consolidated the previous two bonuses into the general rates but with reductions of from 1c to 8c per day. This tentative agree-

ment also reduced the hours of outside labor 1 hour per day. This agreement was signed by the respective representatives but, when put to a referendum vote of the men, was rejected by them. The Government then appointed R. F. Green as a Special Commissioner, to see if he could not arrange a settlement. Mr. Green was appointed under the War Measures Act. He met the parties and made an award, adding 7½% to the rates which had already been agreed on by the representatives of the two parties, the agreement to be effective until the 31st March 1919. Part of the arrangement was the appointment of a Director of Coal Operations and also of a Cost of Living Commission, to sit every four months and to make findings as to the changes in the cost of living. Corresponding changes were to be made to the rates in existence. The additions made by the awards of the Cost of Living Commission are given above as a footnote to the table of wage changes. After the order, effective December 1, 1918, which brought their total additions up to 92c per shift and before the period for another award, the Commission was discontinued.

The next change was Order No. 124 of W. H. Armstrong, Director of Coal Operations, effective April 1, 1919, which reduced to 8 hours the hours of work for all classes above ground. The basis of that change was that the 8-hour rates continued unchanged; the 9-hour rates remained as to amount; and the 10 and 11-hour rates were adjusted on the basis of 8 hours' work for 9 hours' pay. This, in working out, caused some rates to come below the outside laborer's wage and, after some local difficulties, Mr. Armstrong issued another order that no rates should be less than those of outside laborers. Ordinarily the two parties would have entered into negotiations, in March or April, 1919, to make a new arrangement; but conditions were unsettled and it was mutually agreed to carry on the old agreement for the time being. By Armstrong Order No. 134, effective on the 1st December 1919, all rates in the agreement were increased 14%, following a similar increase in the United States. These rates continued in force until the 31st March, 1920. The agreement, signed 10th June 1920, but effective from the 1st April 1920, granted additional increases. The increase of 14%, under the Armstrong Order of December, 1919, was cancelled and the rates in effect prior thereto were increased as follows:

Day Wage Rates (including 92c H.C.L. Bonus) . . . 27% increase
Contract tonnage and contract yardage mining rates except in the lignite field . . . . . 27% "
Contract tonnage and contract yardage rates in the lignite field . . . . . 24c per ton inc.
Yardage, room turning and dead work . . . . . 20% increase
For contract men the high cost of living bonus of 92c was increased by 27% to make it . . . . . $1.17 per day

This Agreement was to run until the 31st March 1922, but in October 1920, a further increase having been granted to day wage men in the U.S. and in accordance with the understanding when the agreement was originally made, the 27% increase of June

1920, was cancelled, and a flat amount of $2.50 per day was added to all men's rates and $1.35 to boys' rates, that is, this was added to the 1st April 1919, rates. The contract miners' wages remained unchanged. It was pointed out that a miner on day wages was receiving $6.35 a day; but, cancelling the 27% increase and adding the $2.50, brought the rate up to $7.50, a net increase of $1.15 a day. Appendix A of Exhibit No. 22 F. (not printed)—Supplementary Agreements—states:

"(1) that an additional be given of $2.50 per day to day men over that paid October 31st, 1919, including 92c war bonus;

"(2) that an additional be given boys equal to that given in the competitive field since October 31st, 1919, including 92c war bonus, the same to date from the signing of the above."

The Agreement is dated 25th October, 1920.

The Agreement of the 23rd August 1922 stated that the general clauses of the Agreement, which expired on the 31st March 1922, should be continued unchanged to the 31st March 1923; but that all day wages and contract rates in the said agreement and supplement, dated 25th October 1920, should be reduced 15%, effective at once, and should remain in effect to 31st March 1923, provided that, if not less than 75% of the Union miners in the central competitive field, comprising Western Pennsylvania, Ohio, Indiana and Illinois, should have negotiated a new wage agreement, the day wage and contract rates in District 18 should be amended to preserve the same relation to the old rates, as would exist in the central competitive field. The Federal Minister of Labor was made the judge as to the fulfilling of the above condition and the amendment of the rates was to be effective from the date of the receipt of his decision. As the agreement in the United States was renewed at the old rates and the Minister gave his decision to that effect, the 15% was restored.

The agreement of the 14th March 1923 simply extended the former agreement for one year, with the usual provision for a conference thirty days prior to the expiration to discuss renewal.

The agreement of the 10th October 1924 subject to the changes noted below, renewed to the 31st March 1927, the agreement, which had expired on the 31st March 1924, "unless sooner terminated by six months' notice in writing from either party to the other," such notice not to be given before the 31st March, 1925. The wages paid to all contract men were reduced by the H.C.L. bonus of $1.17 per man per day. The day wage rates paid to all datal employees were reduced by 12½%. The rates provided in the general clauses under "Miners taken to do Company work" and "Minimum Rate" were reduced by 12½%. Mr. Young stated that, so far as the Association was concerned, the present position was that the six months' notice before the termination of this agreement had been given; but, prior to the giving of this notice, a conference was held. Mr. Young explained at length that, after the conclusion of the agreement in October 1924, the mines in this field, particularly the bituminous mines, continued, with few

exceptions, to run little more than a day a week. As a result, the Association felt it desirable to bring to the official attention of the U.M.W. of A. the fact that they could not secure business, except to an almost valueless amount, under the existing agreement and that, if the U.M.W. of A. officials agreed that it was desirable to take some steps to change the agreement to a basis which would give steadier work, the Association was prepared to meet them or to extend an invitation to them to meet. The U.M.W. of A. officials replied that, while they might not agree as to the reasons for the situation, they would meet.

When they met, the Association suggested a scale already put into effect, in Fernie, B.C., by the Crowsnest Pass Coal Co., which had been a member of the Association but had resigned from it. It should be mentioned that the President of the Crowsnest Pass Coal Co., in the final negotiations for the agreement of the 10th October 1924, expressed very strongly to the Committee and the other negotiators, who were present, that his Company could not operate under the rates proposed. However, he said he would try it out at the Michel mine where his Company got the cheapest coal. The U.M.W. of A. representatives at a second meeting proposed the Knowles Award, which was somewhat higher than the Fernie scale. The parties were unable to get together on this basis; but, when the meeting adjourned that night, Mr. Young said that the Association representatives "had the impression, which may have been incorrect, that they were prepared to sign up on the basis suggested by us." Next morning, however, the U.M.W. of A. officials said they were not prepared to concede any change at all in the agreement but notice could be given, on March 31st 1925, and they would see what would happen in October.

What followed after this was not the result of any negotiations between the Association, as such, and the officials of District 18, but became a matter for individual treatment at each mine. It was on the 18th December 1924 that the new scale was put into effect at the Fernie mines, the day rate for miners being $5.20. Michel followed suit in January 1925 and these mines then got fairly steady work, a considerable quantity of coal being shipped east through the Crowsnest district of Alberta. At first an attempt was made to deal with the situation by joint action among all the unions of that sub-district and the operators. This having failed, the rank and file of the workers elected Committees of their own to go to the Company and ask on what basis work could be resumed. In the result, an agreement at 20c per day higher than the Fernie scale was brought before the men, voted on and accepted. This took place first at the Greenhill mine, on April 7th, followed by Bellevue, then the International and McGillivray Creek mines at Coleman and later at Hillcrest. These new agreements were all made between the respective Companies and their employees. From the Crowsnest Pass district the movement spread to Brazeau Collieries and Canmore, except that at Canmore the day rate for outside labor was made $4.45, as against $4.20 in the other agreements in Alberta and $4.00 in the Fernie agreement. The Galt mines at Lethbridge, in June, negotiated

an agreement with their employees, the scale for miners being $5.00 a day and for outside labor $4.00 per day. Later in the month of June, an agreement was made between the officials of the U.M.W. of A. and 15 mines in the Drumheller Valley on the Alberta Crowsnest scale. This agreement was not submitted to the mine workmen at the various mines for their ratification and, in the result, brought on a strike against the action of the union officials. The officials of the U.M.W. of A. also negotiated new agreements, on the reduced scale, in the mines at Brule, Foothills and Merco. While the terms of these agreements are still in force between the respective Companies and their employees the men have since ceased to belong to the U.M.W. of A.

Three mines in the steam coal field, namely Mountain Park, Cadomin and Luscar, carried the original agreement negotiated in October 1924 right through to October 1, 1925, in accordance with the provisions of that agreement, which enabled them, after March 31st, 1925, to give six months' notice to terminate the agreement. The agreement, thus terminated in accordance with its own provisions, has since been replaced in these camps by new agreements on the basis of the Crowsnest Pass scale.

The Commission is also indebted to Mr. Young for the following complete account of the new agreements, now in effect in mines that were formerly members of the Western Canada Coal Operators' Association. The information regarding the Crowsnest Pass Coal Co. is included because of its bearing on the neighboring mines in this province. A few changes and additions have been made in Mr. Young's memorandum.

16. Memorandum Regarding New Agreements

(IN MINES THAT WERE FORMERLY MEMBERS OF THE WESTERN CANADA COAL OPERATORS' ASSOCIATION.)

Name of Company and Organization with whom Agreement made.	Date	Expiring
Crowsnest Pass Coal Co., Ltd., Fernie, with the British Columbia Miners' Association	18th Dec., 1924	31st Mar., 1928
Crowsnest Pass Coal Co., Ltd., Michel, with the British Columbia Miners' Association	8th Jan., 1925	31st Mar., 1928
West Canadian Collieries, Ltd., Greenhill, with the employees of Greenhill Mine (or their Assn.)	7th Apr., 1925	7th Apr., 1928
West Canadian Collieries, Ltd., Bellevue, with the employees of Bellevue Mine (or their Assn.)	8th Apr., 1925	7th Apr., 1926
McGillivray Creek Coal & Coke Co., Ltd., Coleman, with the employees of the Company (or their Assn.)	15th Apr., 1925	30th Apr., 1928
International Coal & Coke Co., Ltd., Coleman, with the employees of the Company (or their Assn.)	15th Apr., 1925	30th Apr., 1928
Hillcrest Collieries, Ltd., Hillcrest, with the employees of Hillcrest Collieries (or their Assn.)	24th Apr., 1925	31st Oct., 1928

Name of Company and Organization with whom Agreement made.	Date	Expiring
Brazeau Collieries, Ltd., Nordegg, with the employees of the Brazeau Collieries....	5th May, 1925	31st Mar., 1928
Canmore Coal Co., Ltd., Canmore, with the employees of Canmore Coal Co. (or their Assn.)	11th May, 1925	11th May, 1926
Galt Mines, Lethbridge, with the employees of Galt Mines, represented by Lethbridge Miners' Federation	3rd June, 1925	31st Mar., 1928
Alberta Block Coal Co., Ltd., Drumheller; Atlas Coal Co, Ltd., Drumheller; Craig's Coal Co., Ltd., Drumheller; Elgin Coal Co., Ltd., Drumheller; Gem Coal Mining Co., Ltd., Drumheller; Hy-grade Coal Co., of Drumheller, Ltd., Drumheller; Newcastle Coal Co., Ltd., Drumheller; Mid-West Collieries, Ltd., Drumheller; J. D. Thomas Coal Co., Ltd., Drumheller; Midland Coal Co., Ltd., Midlandvale; Great West Coal Co., Ltd. (Star Mine), Aerial; Jewel Collieries, Ltd., Wayne; Rosedeer Coal Mining Co., Ltd., Wayne; Excelsior Collieries, Ltd., Wayne; Western Commercial Coal Co., Ltd., Wayne; Agreement made between the Red Deer Valley Coal Operators' Association and the United Mine Workers of America, District 18	17th June, 1925	31st Mar., 1928
Rosedale Coal Mining Company, Ltd., Rosedale, with United Mine Workers of America, District 18	26th June, 1925	31st Mar., 1928
Mountain Park Collieries, Ltd., Mountain Park, with employees of Mountain Park Collieries, Ltd.	17th Nov., 1925	31st Mar., 1928
Cadomin Coal Company, Ltd., Cadomin, with employees of Cadomin Coal Company, Ltd.	17th Nov., 1925	31st Mar., 1928
Luscar Collieries, Ltd., Luscar, with employees of Luscar Collieries, Ltd.....	17th Nov., 1925	31st Mar., 1928

Management of Mine Clause

In the Agreement of October 10, 1924 between the Western Canada Coal Operators' Association and United Mine Workers of America, District 18, the Management of Mine Clause reads:

"The right to hire and discharge, the management of the mine and the direction of the working forces are vested exclusively in the Company and the United Mine Workers of America shall not abridge this right.

However, the company agrees not to discharge employees or refuse work to applicants on account of or because of their affiliation with the United Mine Workers of America.

Note: It is not the intention of this clause that miners working under contract will be taken from their working place indefinitely to perform company work."

In the new Agreements, the clause, inserting the name of the organization with whom the new agreement is made instead of "United Mine Workers of America" if it is not with that organization, reads as follows:

Paragraph 1 only:

West Canadian Collieries, Ltd.....Bellevue.
West Canadian Collieries, Ltd.....Greenhill.
Brazeau Collieries, Ltd.....Nordegg.
Canmore Coal Co., Ltd.....Canmore.
Galt Mines .....Lethbridge.
Mountain Park Collieries, Ltd.....Mountain Park.
Cadomin Coal Company, Ltd.....Cadomin.
Luscar Collieries, Ltd.....Luscar.

Paragraphs 1 and 3 only:

International Coal & Coke Co., Ltd.....Coleman.
McGillivray Creek Coal & Coke Co., Ltd. Coleman.

Paragraphs 1, 2, and 3:

Drumheller Group .....Drumheller, Rosedale & Wayne.
Rosedale Coal Mining Co., Ltd.....Rosedale.

Crowsnest Pass Coal Co., Ltd., Fernie & Michel:

"The question of the management of the mine, the employment of men and the direction of the working forces, shall be solely within the jurisdiction of the Company."

Hillcrest Collieries, Ltd., Hillcrest:

"The question of the management of the mine, the employment and discharge of men, and the direction of the working forces shall be solely within the jurisdiction of the Company."

Clause Regarding Union Affiliation

In the Agreement of October 10, 1924, between the Western Canada Coal Operators' Association and the United Mine Workers of America, District 18, the clause regarding union affiliation reads:

CHECK-OFF

"This contract is made and entered into for the sole use of the members of the United Mine Workers of America and the members of the Western Canada Coal Operators' Association. All men who work in and around the mines who are eligible to become members of the United Mine Workers of America shall join that organization, and agree to sign check-off for all dues, assessments, and fines, and the management of the mines agrees to forward deductions made to the Acting Secretary of the District, or such other person as that official may designate.

FORM OF ORDER

To..... .....192..

I authorize and empower you to deduct and pay to the Acting Secretary of District 18, U.M.W. of A., or such other person as that official may designate, from my earnings from month to month the sum of five dollars ($5.00) or such less amount as may be designated by the Acting Secretary of the District or such other person as he may appoint by order.

Signed.....

Witness....."

The above clause is variously dealt with under the new Agreements as follows:

Drumheller Group:

The same clause except that the sentence is added at the end of the Check-off Clause, "All union assessments over the sum of $1.50 per employee per month must be approved by the Secretary of District 18."

Galt Mines, Lethbridge:

Employees' Association:

"It is understood and agreed that, with the exception of those hereinafter specified as not being within the jurisdiction of the Federation, all employees in and around the mines shall join the Federation.....

Deductions:

The Company agrees to make deductions on definite orders in the form hereinafter specified from all employees coming under the jurisdiction of the Federation, not exceeding the sum of 50c per employee per pay and to pay the same over to the Secretary of the Lethbridge Miners' Federation, or such other person as he may designate."

Brazeau Collieries, Ltd., Nordegg:

"Check-off:

This contract is made and entered into for the sole use of the members of Brazeau Local Union and Brazeau Collieries, Ltd. All men who work in and around the mine who are eligible to become members of the Local Union are advised to do so, and to sign the check-off for dues and assessments, and the management of the mines agrees to forward deductions made to the Acting Secretary of the Local or such other person as that official may designate."

Canmore Coal Co., Ltd., Canmore;

West Canadian Collieries, Ltd., Bellevue and Greenhill:

"Check-off:

All men working in and around the mine may become members of the Association and agree to sign the check-off for all dues and assessments, and the Company agrees to forward such to the Secretary of the Association. The collection will be limited to the sum of $1.00 per period."

McGillivray Creek Coal & Coke Co., Ltd., Coleman;
International Coal & Coke Co., Ltd., Coleman:

"Open Shop:

It is distinctly understood and agreed between the parties that there is to be no discrimination on the part of the companies against union men, or on the part of the union men against non-union men employed.

Check-off:

All men working in or around the mine (with the exception of those employees hereinafter listed under section, "Employees not under jurisdiction") may become members of the Association and may agree to sign the check-off for all dues and assessments and the Company agrees to collect such dues and assessments and to forward such to the Secretary of the Association. The collections to be made by the Company are not to exceed the sum of $1.00 per period."

Crowsnest Pass Coal Co., Ltd., Fernie and Michel:

"Deductions:

The Company agrees to make deductions from employees not to exceed the amount set out below to defray expenses of committee for such amounts as they have definite orders for from individuals."

Hillcrest Collieries, Ltd., Hillcrest:

Same clause as Crowsnest Pass Coal Company, except that it is headed "Check-off" instead of "Deductions."

Limit of Deductions:

Drumheller Group—$5.00 per month.
Canmore Coal Company—$2.50 per pay period.
McGillivray Creek Coal & Coke Co., Ltd.—$1.00 per pay period.
International Coal & Coke Co., Ltd.—$1.00 per pay period.
West Canadian Collieries, Ltd.—$1.00 per pay period.
Brazeau Collieries, Ltd.—$1.00 per pay period.
Galt Mines—50c per pay period.
Crowsnest Pass Coal Co., Ltd.—50c for men and 25c for boys per month.
Hillcrest Collieries, Ltd.—50c for men and 25c for boys per month.

Exceptions:

Brazeau Collieries—Special assessments over $1.00 per pay must be approved by the Company before deduction is made.
Crowsnest Pass Coal Co., Ltd.—The Company agrees that in case of death by sickness of a member of the B.C. Miners' Association, they will make an extra deduction of a similar amount to defray funeral expenses.
Mountain Park Collieries, Ltd.;
Cadomin Coal Company, Ltd.;
Luscar Collieries, Ltd.;
Same check-off clause and deductions as Brazeau Collieries.

Settlement of Local and General Disputes

This clause in the Western Canada Coal Operators' Association Agreement laid down the following steps, each step being conditional upon failure to agree in the preceding step. If agreement was reached at any step, it was final.

1. The person affected shall take the matter up with the Pit Boss, Overman, or Foreman in charge of the work.
2. The Pit Committee shall take the matter up with the Superintendent or Mine Manager.
3. A Joint Committee of six, composed of the General Manager or the General Superintendent of the mine affected, one other appointed by the first, and the Commissioner of the Association, representing the operators, and the President of District 18, U.M.W. of A., one other district officer, and the Secretary of the Local at the mine affected, representing the employees, shall take the matter up within fourteen days of the written reference thereof to the Commissioner and the President.
4. The Commissioner and the President shall select an independent Chairman or shall ask the Minister of Labor to appoint one, who when selected or appointed shall, with the committee named in the third step, deal with the matter.

During the progress of these steps all men, except in case of discharge, shall remain at work.

Claims covering alleged unjust discharge, if made within five days, are to be dealt with under the preceding clause, compensation for time lost, if reinstatement follows investigation, to be left to the Committee designated in the third step.

New Agreements

Drumheller Group:

The old clause is continued, except that the Commissioner of the Red Deer Valley Association acts instead of the Commissioner of the Western Canada Coal Operators' Association.

Crowsnest Pass Coal Company;
McGillivray Creek Coal & Coke Company;
International Coal & Coke Company;
West Canadian Collieries;
Hillcrest Collieries;
Canmore Coal Company:

The first and second steps are continued. If no agreement is reached, the matter is dealt with by the Management and the Employees' Committee. This step is final.

Galt Mines, Ltd.:

The matter is primarily taken up between the person affected and the mine manager, overman or foreman in charge of the work, then by the Management and the Employees' Committee, and finally by an independent Chairman selected by agreement or appointed by the Minister of Labor. His decision is final.

Brazeau Collieries;
Mountain Park Collieries, Ltd.;
Cadomin Coal Company, Ltd.;
Luscar Collieries, Ltd.:

The first and second steps are continued, then the matter is referred to two parties mutually agreed on, who, if they do not agree, select or ask the Minister of Labor to appoint, an independent Chairman. The decision of this Committee is final.

Duties of Pit Committee

This clause in the Western Canada Coal Operators' Association Agreement provided for a Pit Committee of three in each mine or plant covered by this agreement, selected by the employees working at such plant from among their own number. One member could be a check-weighman or officer of the Local Union, not necessarily an employee, although his selection as check-weighman or officer must previously have been from among the employees of the Company.

The duties of the Pit Committee were confined to the settlement of disputes between the overmen or foremen and workmen, which these parties had been unable to adjust themselves.

The Committee was prohibited from going around the mine except in pursuance of the settlement of the above disputes.

New Agreements

Drumheller Group:

The old clause is continued without change.

Crowsnest Pass Coal Company:

The caption of the clause is changed to "Employees' Committee," and provision is made for a representative from each mine, one from the surface workers, and the President and Secretary of the Miners' Association. This constitutes the full committee which shall meet the management once a month for the purpose of "Discussing conditions in connection with the work and welfare of the employees." Special meetings may be arranged on request.

On matters affecting one mine only, the Committee is the President and Secretary of the Association and the representative of that mine.

This committee has the same jurisdiction in connection with the settlement of local and general disputes as the Pit Committee had previously.

Hillcrest Collieries:

This clause is generally the same as that of the Crowsnest Pass Coal Company. The Committee, however, is to be composed of five men, two underground contract men, two underground day men and one surface man. The officers of the men's organization are to be included in the five. The monthly meeting is to be for the purpose of "discussing conditions in connection with the welfare of the employees."

West Canadian Collieries;
McGillivray Creek Coal & Coke Company;
International Coal & Coke Company;
Hillcrest Collieries;
Canmore Coal Company;
Brazeau Collieries;
Galt Mines:

Although the wording is slightly changed, the general effect is the same as in the old agreement. West Canadian Collieries and Brazeau Collieries do not include the check-weighman as eligible to act on the Pit Committee.

McGillivray Creek Coal Company and the International Coal & Coke Company provide for a committee of four; the other companies, three.

Mountain Park Collieries, Ltd.;
Cadomin Coal Company, Ltd.;
Luscar Collieries, Ltd.:

The clause is the same as in agreement which terminated on 30th September, 1925, with addition of monthly meeting to discuss "conditions in connection with the welfare of the employees."

New Work

In the Western Canada Coal Operators' Association Agreement the committee of six, to whom were referred disputes under the clause, "Settlement of Local and General Disputes" also dealt with New Work.

New Agreements

Drumheller Group:

The old clause is continued.

Galt Mines:

Provides for a joint committee of six, three representing the men and three the Company. If they fail to agree, they select or ask the Minister of Labor to appoint an independent Chairman, whose decision is final.

Brazeau Collieries:

No clause covering "New Work."

Crowsnest Pass Coal Company;
Hillcrest Collieries:

Provides that either party may ask for a price on new work, and that they will be guided by existing prices and the effect on the earnings of the men.

McGillivray Creek Coal & Coke Company;
International Coal & Coke Company;
West Canadian Collieries;
Canmore Coal Company:

The Local Committee and the Management take the matter up and follow the procedure in the "Settlement of Local and General Disputes" clause.

Mountain Park Collieries, Ltd.;
Cadomin Coal Company, Ltd.;
Luscar Collieries, Ltd.:
Old clause continued.

Minimum Rate—Miners Taken to do Company Work

The following rates are established:

Crowsnest Pass Coal Company	$5.20
McGillivray Creek Coal & Coke Company	5.40
International Coal & Coke Company	5.40
Canmore Coal Company	5.40
Drumheller Group	5.40
West Canadian Collieries	5.40
Hillcrest Collieries	5.40
Brazeau Collieries	5.40
Mountain Park Collieries, Ltd	5.40
Cadomin Coal Company, Ltd	5.40
Luscar Collieries, Ltd	5.40

Galt Mines:
Miners taken to do Company work are paid $5.00.
Minimum rate clause is superseded by an "Abnormal Conditions" clause which covers payment where the seam is faulty or thins out to less than 48 inches.

Overtime

Crowsnest Pass Coal Company:
No clause.

McGillivray Creek Coal & Coke Company;
International Coal & Coke Company;
West Canadian Collieries;
Canmore Coal Company:
The scale rate per hour except in the case of Sunday work done by repair men, which shall be paid at the rate of 20% above the scale.

Hillcrest Collieries;
Brazeau Collieries;
Galt Mines;
Mountain Park Collieries, Ltd.;
Cadomin Coal Company, Ltd.;
Luscar Collieries, Ltd:
No change in the old clause, paying scale rate per hour.

Preference of Employment

Galt Mines:
In case an employee is thrown out of employment, unless discharged, or has left of his own accord, he shall be given preference over new men.

Drumheller Group:

In case an employee is thrown out of employment, unless discharged, or unless the employee has voluntarily withdrawn from employment he shall be given preference over new men where vacancies occur in the same mine or in other mines in the same camp operated by the same company.

Other Companies:

No change from old clause.

Wet Places

The general definition of "Wet Places" in the old agreement is continued in the new agreements except in the case of the Crowsnest Pass Coal Company, which has no wet place clause, and Hillcrest which provides a rate but does not specify what constitutes a wet place.

McGillivray Creek, International, and West Canadian Collieries limit the application of the definition by exempting places "where the use of gum boots will keep a man's feet dry."

The additional amount paid in wet places is 50c except at the Brazeau Collieries, which is 55c, and at Galt where the amount is not specified.

Mountain Park, Cadomin and Luscar, 50c per day extra.

Other Clauses

Except where clauses have been dropped from the new agreements, the remainder of the clauses in the old agreement have been repeated in most cases without change, and where changes have occurred they are slight and unimportant.

Contract Rates

The reduction put into effect by the Western Canada Coal Operators' Association Agreement made October 10, 1924, was $1.17 per man per shift worked, or about 12%. In the individual agreements negotiated since that time, the further reductions have been as follows:

Crowsnest Pass Coal Company, at Fernie and Michel:

Reductions varying somewhat on individual rates, but approximately 12%

West Canadian Collieries, Blairmore and Bellevue;
McGillivray Creek Coal & Coke Company, Coleman;
International Coal & Coke Company, Coleman;
Brazeau Collieries, Nordegg;
Hillcrest Collieries, Hillcrest;
Mountain Park Collieries, Ltd.;
Cadomin Coal Company, Ltd.;
Luscar Collieries, Ltd.:

Room Work 15%
Entry Work 15%
Pillar Work 20%
Yardage, Room Turning and Deadwork 20%

Note: Hillcrest secured in addition to the above general adjustment, a special adjustment on the differential previously in existence between pitch and flat work.

Galt Mines, Lethbridge:

Pick Mining 10%
Machine Mining, Runners and Scrapers 15%
Loaders. In Rooms. Tonnage rate 6¼%
Other rates 10%
In Narrow Work. All rates 15%

Canmore Coal Company, Canmore:

Exact particulars not available, but understood to be equivalent to the Alberta Crowsnest mines.

Drumheller Group:

All Contract rates 15%

TABLE 99—*Comparative statement of day wage schedules.*

Column 1. Western Canada Coal Operators' Association;
Agreement, October 10, 1924.
" 2. West Canadian Collieries, Ltd., Greenhill & Bellevue;
Agreements, April 7 and 8, 1925.
" 3. International Coal & Coke Co., Ltd., Coleman;
Agreement, April 15, 1925.
McGillivray Creek Coal & Coke Co., Ltd., Coleman;
Agreement, April 15, 1925.
" 4. Hillcrest Collieries, Ltd., Hillcrest;
Agreement, April 24, 1925.
" 5. Brazeau Collieries, Ltd., Nordegg;
Agreement, May 5, 1925.
Mountain Park Collieries, Ltd.;
Agreement, November 17, 1925.
Cadomin Coal Company, Ltd.;
Agreement, November 17, 1925.
Luscar Collieries, Ltd.;
Agreement, November 17, 1925.
" 6. Drumheller Valley Group;
Agreement, June 17, 1925.
" 7. Canmore Coal Co., Ltd., Canmore;
Agreement, May 11, 1925.
" 8. Galt Mines, Lethbridge;
Agreement, June 3, 1925.
" 9. Crowsnest Pass Coal Co., Ltd., Fernie and Michel;
Agreement, December 18, 1924.

INSIDE DAY WAGES—	1	2	3	4	5	6	7	8	9
Rock Miner	$7.02	$5.85	$5.85	$5.85	.....	$5.85	$5.85	.....	$5.65
Machineman, Electric	8.24	5.40	.....	.....	.....	7.00	.....	.....	.....
Machineman, Air	7.02	5.40	.....	.....	.....	.....	.....	.....	.....
Machineman's Helper, Electric	6.67	5.00	.....	.....	.....	5.45	.....	.....	.....
Air	6.56	5.00	.....	.....	.....	.....	.....	.....	.....
Radial Machineman	.....	.....	.....	.....	.....	5.40	.....	.....	.....
" " Helper	.....	.....	.....	.....	.....	4.45	.....	.....	.....
Mine Carpenter	.....	5.50	.....	5.50	.....	5.50	.....	.....	.....
Driver Boss	.....	5.40	.....	.....	.....	5.40	.....	.....	.....
Pipefitters	.....	5.40	.....	5.40	.....	5.40	.....	5.00	5.20
Toolmen	.....	.....	.....	.....	.....	.....	.....	5.00	.....
Stablemen	.....	.....	.....	5.40	.....	5.40	.....	4.90	.....
Driver, Spike Team	6.76	5.40	5.40	5.40	.....	5.40	5.40	.....	5.40
Miner	6.56	5.40	5.40	5.40	5.40	5.40	5.40	5.00	5.20
Shotlighter	6.56	5.40	5.40	5.40	5.40	5.40	5.40	5.00	5.20
Bratticeman	6.56	5.40	5.40	5.40	5.40	5.40	5.40	5.00	5.20
Timberman	6.56	5.40	5.40	5.40	5.40	5.40	5.40	5.00	5.20
Tracklayer	6.56	5.40	5.40	5.40	5.40	5.40	5.40	5.00	5.20
Main & Tail Rope Rider	6.56	5.40	.....	.....	.....	5.40	5.40	.....	5.20
Clutchmen	6.56	5.40	.....	.....	.....	5.40	.....	5.00	.....
Jiggers	.....	.....	.....	.....	5.40	.....	.....	.....	.....
Cagers, shaft	6.56	5.40	.....	.....	.....	5.40	.....	5.00 day	.....
								4.25 night	
Hoistmen	6.31		4.90	4.90					4.70
	6.56	5.40	5.40	5.40	.....	5.40	5.05	.....	5.20
Pumpmen, Galt Mines	6.47	.....	.....	.....	.....	.....	.....	4.75	.....
Timber Handler	6.31	5.10	5.10	5.10	.....	5.10	5.10	.....	.....
Motorman	6.31	4.90	4.90	.....	4.80	4.90	5.05	.....	4.70
Driver	6.31	4.90	4.90	4.90	to	4.90	5.05	4.90	4.70
Rope Rider	6.31	4.90	4.90	4.90	5.00	4.90	5.05	.....	4.70
Locomotive Engineer	6.31	4.90	4.90	.....	.....	4.90	4.90	.....	4.70
Bratticeman's Helper	6.03	4.45	4.45	4.45	4.45	4.45	4.65	4.25	4.25
Timberman's Helper	6.03	4.45	4.45	4.45	4.45	4.45	4.65	4.25	4.25
Tracklayer's Helper	6.03	4.45	4.45	4.45	4.45	4.45	4.65	4.25	4.25
Motorman's Helper	6.03	4.45	4.45	.....	4.45	4.45	4.65	.....	4.25
Locomotive Switchman	6.03	4.45	4.45	.....	4.45	4.45	4.65	.....	4.25
Couplers	6.03	4.45	4.45	4.45	4.45	4.45	.....	4.25	4.25
Pushers	6.03	4.45	4.45	4.45	.....	4.45	.....	4.25	4.25
Buckers	6.03	4.45	4.45	4.45	.....	4.45	.....	.....	4.25
Loaders	6.03	4.45	4.45	4.45	.....	4.45	.....	.....	4.25
Cagers, Slope & Incline	6.03	4.45	4.45	.....	.....	4.45	4.65	.....	.....
Pumpmen	6.03	4.45	4.45	4.45	.....	4.45	4.65	.....	.....
Grippers	6.03	4.45	.....	.....	.....	4.45	.....	4.40	4.25
Pipe Fitter's Helper	6.03	4.45	.....	.....	.....	4.45	4.25	4.25	.....
Rollermen	6.03	4.45	.....	4.45	.....	4.45	.....	4.40	4.25
Dock Boss	.....	.....	.....	.....	.....	.....	.....	4.25	.....
Track Cleaners	.....	.....	.....	.....	.....	.....	.....	4.25	.....
All other labor unclassified	6.03	4.45	4.45	4.45	4.45	4.45	4.65	4.25	4.25

OUTSIDE DAY WAGES—	1	2	3	4	5	6	7	8	9
Power House	6.66	4.90	.....	4.90	.....	4.90	.....	.....	.....
Engineers	7.28	5.70	5.70	5.70	5.70	5.70	5.70	5.25	.....
Hoisting Engineers	6.47	.....	.....	4.90	.....	.....	.....	.....	.....
	7.04	5.55	5.55	5.55	.....	5.55	5.55	6.00	.....
Tail Rope Engineers	6.90	5.70	.....	.....	.....	5.70	5.70	.....	5.50
Blacksmiths	7.12	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.30
Carpenters	7.12	5.50	5.00	5.50	5.50	5.50	5.50	5.50	5.30
Machinists	6.66	4.90	4.90	4.90	.....	4.90	5.15	4.70	4.70
	7.12	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.30
Electricians	.....	.....	.....	.....	5.50	.....	.....	.....	.....
Plumbers	.....	.....	.....	.....	5.50	.....	.....	.....	.....
									5.00
Endless Rope Engineers	6.56	5.40	.....	.....	.....	5.40	.....	5.25	5.20

OUTSIDE DAY WAGES—	1	2	3	4	5	6	7	8	9
Dirt Dump Engineers	.....	.....	.....	.....	.....	.....	.....	5.25	.....
Incline Engineer . . .	6.66	4.90	.....	.....	.....	4.90	.....	.....	.....
Boxcar Loader Engineer	6.66	4.90	4.90	4.90	4.90	4.90	5.15	5.00	4.70
Tipple Engineer . . .	6.66	4.90	.....	4.90	4.90	4.90	.....	5.00	4.70
Locomotive Engineer.	6.66	4.90	4.90	4.90	.....	4.90	5.55	.....	4.70
Car Repairer	6.66	4.90	4.90	4.90	4.90	4.90	5.15	5.00	4.70
Breaker Engineer . .	6.66	4.90	.....	.....	.....	4.90	.....	.....	.....
Timber Framer . . .	6.66	4.90	.....	.....	4.90	4.90	.....	.....	.....
Motor Truck Driver .	6.66	4.90	.....	.....	.....	4.90	.....	.....	.....
Motorman	.....	.....	.....	.....	4.90	.....	.....	.....	.....
Hoistman	.....	.....	.....	.....	.....	.....	.....	5.00	.....
Tipple Motorman . .	.....	.....	.....	.....	.....	.....	.....	.....	4.50
Locomotive Switchman (Head)	.....	.....	.....	.....	.....	.....	5.35	.....	.....
Locomotive Switchman	6.30	4.50	4.50	4.50	.....	4.50	4.90	.....	4.30
Locomotive Firemen .	.....	.....	.....	.....	.....	.....	4.90	.....	.....
Electrician's Helper .	.....	4.45	4.45	.....	4.45	4.45	4.45	4.25	.....
Blacksmith's Helper .	6.20	4.45	4.45	4.45	4.45	4.45	4.80	4.25	4.00
Carpenter's Helper .	6.20	4.45	4.45	4.45	4.45	4.45	4.80	4.00	4.00
Car Repairer's Helper	6.20	4.45	4.45	4.45	4.45	4.45	4.80	4.00	4.00
Machinist's Helper. .	6.20	4.45	4.45	4.45	4.45	4.45	4.80	4.25	4.00
Bottom Man	6.20	4.45	4.45	.....	.....	4.45	.....	.....	.....
Fireman	6.20	4.45	4.45	4.45	4.45	4.45	5.40	4.45	4.25
Tipple Dumper . . .	6.20	4.45	4.45	4.45	4.45	4.45	4.80	4.25	4.00
Tipple Picker Boss . .	.....	.....	.....	.....	.....	.....	.....	.....	4.25
Breaker Picker Boss .	6.20	4.45	.....	.....	.....	4.45	4.80	4.25	.....
Teamsters	6.19	4.45	4.45	4.45	4.45	4.45	4.75	4.25	4.25
Boxcar Shoveller . . .	6.19	4.45	.....	.....	.....	4.45	.....	4.45	.....
Plumber's Helper . .	.....	.....	.....	.....	4.45	.....	.....	.....	.....
Fan Fireman	5.99	.....	.....	.....	.....	.....	.....	.....	4.70
Motor Conductor . . .	.....	.....	.....	.....	4.45	.....	.....	.....	.....
Boiler Washer	.....	.....	.....	.....	4.45	.....	.....	4.40	.....
Rock Bank Runner . .	.....	.....	.....	.....	.....	.....	.....	4.40	.....
Spiralmen	.....	.....	.....	.....	.....	.....	.....	4.25	.....
Lampmen	5.75	4.45	4.45	4.45	4.45	4.45	4.50	4.30	3.75
	6.19								4.00
Railway Car Handler.	5.86	4.30	4.30	4.30	4.45	4.30	.....	4.10	3.85
Tipple Shakerman . .	.....	.....	.....	.....	.....	.....	.....	.....	4.10
Screen Engine Tender	5.91	4.20	.....	.....	.....	4.20	.....	.....	.....
Fireman's Helper . .	5.91	4.20	4.20	.....	.....	4.20	.....	.....	3.75
Tipple Dumper's Helper	5.91	4.20	4.20	4.20	.....	4.20	.....	4.10	4.00
Top Cager	5.91	4.20	4.20	.....	.....	4.20	.....	.....	.....
Timber Sawyer . . .	5.91	4.20	4.20	.....	.....	4.20	.....	4.25	.....
Water Tender	5.87	4.20	.....	.....	.....	4.20	.....	.....	.....
Breaker Oiler	5.87	4.20	.....	.....	.....	4.20	.....	.....	.....
Washer or Tipple Oiler	5.87	4.20	4.20	4.20	4.40	4.20	.....	4.20	4.00
River Pumpman . . .	.....	.....	.....	.....	.....	.....	.....	4.10	.....
Boiler Washer's Helper	.....	.....	.....	.....	.....	.....	.....	4.10	.....
Spraggers	.....	.....	.....	.....	.....	.....	.....	4.00	.....
Stablemen	5.76	4.20	4.20	4.20	4.20	4.20	4.45	.....	4.00
Slate Pickers	4.76	4.20	4.20	4.20	4.20	4.20	.....	4.00	3.75
Car Oilers	5.76	4.20	4.20	4.20	4.20	4.20	.....	4.00	
Ashmen	5.76	4.20	4.20	4.20	4.20	4.20	.....	4.00	
Wiper	5.76	4.20	4.20	4.20	.....	4.20	.....	4.00	to
Coupler	5.76	4.20	4.20	4.20	.....	4.20	.....	.....	
Rock Bank Men . . .	5.76	4.20	4.20	4.20	.....	4.20	.....	4.00	
Dirt Bank Men . . .	5.76	4.20	.....	4.20	.....	4.20	.....	.....	
Finisher after boxcar .	5.76	4.20	4.20	4.20	4.20	4.20	.....	.....	4.00
Fanmen (loader) . .	5.76	4.20	.....	.....	.....	.....	.....	4.00	3.50
Washhouse men . . .	.....	.....	.....	.....	4.20	.....	.....	.....	.....
Car Pushers	.....	.....	.....	.....	4.20	.....	.....	.....	.....
Aged or Impaired				3.20					
Employees	.....	.....	.....	3.70	.....	.....	.....	.....	.....
All other labor									3.75
unclassified	5.76	4.20	4.20	4.20	4.20	4.20	4.45	4.00	4.00

BOYS' RATES

Columns 2, 3, 4, 5, and 7 make a flat rate for all boy occupations, viz.:

Outside ..... $3.00 Inside $3.50

Column 6 also makes a flat rate, but on a sliding scale, viz.:

Outside.....$2.20 to $3.00 Inside.....$2.50 to $3.50

In all these agreements, the age of 18 is made the limit to which these rates are paid; men's wages being paid thereafter.

Columns 8 and 9 specify individual rates as follows:

Outside—	1	8	9
Car oilers	$3.85	$2.50	$2.50
Couplers	3.85	.....	2.50
Tipple Dumpers	3.85	.....	2.25
Slate Pickers	3.53	2.50	2.50
Tally Boys	3.53	.....	2.00
Check Boys	.....	2.50	.....
Inside—	**1**	**8**	**9**
Drivers	$3.85-$5.02	$2.75-$4.35	$2.50-$4.25
Grippers	3.85- 5.02	2.75- 4.35	.....
Pick Carriers	3.53- 5.02	2.75- 4.25	.....
Switch Boys	3.53- 3.85	.....	2.25- 2.55
Couplers	3.85	2.50	2.55
Door Boys	3.23	.....	2.00
Trappers	.....	2.50	.....
Boys on Small Hoist	.....	.....	2.50- 4.00

Column 9 (Fernie-Michel Agreement) also provides a sliding scale for new boys starting work, viz.:

Outside (14 years or over)		Inside (15 years or over)	
1st year	$2.00	1st year	$2.50
2nd year	2.25	2nd year	2.75
3rd year	2.50	3rd year	3.00
4th year	3.00	4th year	3.50
5th year	4.00	5th year	4.00

17. Edmonton and District Miners' Federation

Although as stated above the Edmonton & District Miners' Federation got their charter in February, 1923, it will be well to record the changes in rates of wages at the same mines from a little earlier date.

TABLE 100—*Scale of day rate wages in mines now having agreements with the Edmonton and District Miners' Federation.*

Inside rates, per 8-hour day—	1921	Agreement, July 7, 1923, effective Sept. 1, '23 to June 30, '24	Effective to June 30, 1925	Agreement, Aug. 25, '25, effective to June 30, '26
Miners, Timbermen, Tracklayers	$5.60	$5.60	$5.00	$4.75
Cager (Chief)	5.60	5.60	5.00	4.75
Drivers	5.36	5.36	4.80	4.32
Laborers	4.80	4.80	4.50	4.05
Boys	3.60	3.60	3.00	3.00
Outside rates, per hour—				
Blacksmiths	$ .72	$ .72	$ .70	$ .70
Carpenters	.70	.70	.70	.70
Laborers	.54	.54	.50	.50
Boys	.30 to .40	.30 to .40	.30 to .40	.30 to .40

December, 1921—13% reduction. March, 1922—Further 12% reduction. October, 1922—12% restored.

The agreement of the 7th July 1923 was made between the Northern Alberta Coal Operators' Association and the Edmonton & District Miners' Federation. This agreement recognizes the right of the management to hire and discharge and direct the working forces; it recognizes the Federation and agrees to the check-off of union dues on individual orders, signed by the workmen, up to $1.00 per month. It excepts from membership in the Federation certain officials and foremen; it recognizes prevailing customs and established working conditions; it constitutes pit committees for the settlement of disputes, which committees with the Mine Superintendent or Manager endeavor to settle the matter. In the event of failure, the dispute is referred to the President of the Association and the President of the Federation who, together with the Superintendent or some other official of the mine and a member of the Federation selected by the employees of the mine, shall endeavor to reach a decision. Failing this, an independent Chairman is to be appointed or, if an independent Chairman cannot be selected, either party may proceed to apply for a Board of Conciliation. Work shall continue pending such final settlement. Anyone thrown out of employment by reason of lack of work shall be given the preference when work is available. The agreement then proceeds to give the contract rates and certain conditions as to dockages, etc., at the individual mines which at that time are listed as:

Bush Mine Coal Co., Ltd.
Humberstone Mines, Ltd.
Fraser-McKay Coal Co., Ltd.
Great West Coal Co., Ltd.
Marcus Coal Mines, Ltd.
Penn Mine Coal Co., Ltd.
Edmonton Collieries, Ltd.

The agreement now in force, namely the agreement of the 24th August, 1925, provides for a reduction of 13% in the contract rates.

17a. Sundry Wage Agreements

It is reported that the Red Deer Valley Miners' Union has made agreement with a few mines on the Crowsnest Pass scale. It is also reported that in some of the mines in Drumheller an increase of 7½% on the day wage rates has been granted since the agreement was signed. On October 1st, 1925, a scale of wages was put into effect in the Carbon field 10% lower than the U.M.W.A. Drumheller scale.

18. Variations in Agreements and Wage Differentials

In the questionnaires sent out by the Commission, both operators and unions were invited to express their opinions as to variations in agreements to meet district conditions. The expression of opinion by the operators ranged from "Desirable but very difficult to work out" to "Absolutely necessary." The most detailed suggestion was that the agreements should be uniform throughout the steam coal mines and, likewise, throughout each

district of the lignite and sub-bituminous mines. The replies by the mine workers' local unions ranged from absolute condemnation to grudgingly admitting the necessity but stressing the need in all cases for a minimum wage. The most complete reply to this question received from any union was as follows:

"No necessity for different rates in day wage. The same energy is expended and employees should be paid according to the ability of the industry as a whole to pay. Cause of variance in conditions mainly due to nature. This point stressed by private control. If industry can guarantee so much out of one small company by which the operator balances his whole mine operations the same can be applied to the industry as a whole. The operators balance their mine operations as a whole not because one section in the mine is more costly than another and they accordingly base their profits on same basis."

This matter of wage differentials between mines and between districts has been a subject of much controversy throughout the entire coal industry of the continent. In the United States, the Mineworkers' organizations, as far back as 1886, agreed with the operators on the principle of differential rates in order to enable the poorer mines to operate in competition. In accordance with this theory of competitive equality, wages were fixed so that all the mines in the district were able to produce coal and put it on the market, the earning capacity of the men being given secondary consideration. In the result, some miners suffered more or less and some operators suffered more or less but the theory was that one operator could not drive another out of the market. This principle applied chiefly to the contract rates of tonnage workers and was not, with minor exceptions, applied to day rates. For example, in Illinois there were 19 different tonnage rates ranging from $1.04 to $1.74 a ton. Directly opposed to this theory of competitive equality for the operators is the theory of fixing wages on uniform earning capacity for the men. Contract rates on this basis differ from mine to mine according to the natural conditions so as to equalize the earning power of the contract miners. On this same principle, it is customary for a new mine to work on day rates until the proper contract rates can be established to produce the same earnings as in other mines in the district.

An allied problem is that of the differentials in rates between different jobs in the mine. The tables, already given in this chapter, will indicate very well the great multiplication of rates, which may or may not correspond with the skill, experience or effort involved in performing the respective operations. This complicated scale has been built up in a fortuitous way, often by circumstances of individual workmen at individual mines, and then perpetuated by percentage changes. It will be seen that some simplification of the scale has been accomplished in the recent agreements and it would seem desirable that such a process should be carried further. The complex rates not only involve needless work on the part of the operator in making up the payroll but they are, undoubtedly, a cause of discontent within the ranks of the workmen.

This whole question, therefore, of differentials in rates, as between jobs in the mine and as betwen districts, is one that calls for further study and solution by joint effort on the part of the operators and workmen. This Commission finds that, in Alberta, the principle of competitive equality is in force only between sub-districts of the lignite fields. Within those sub-districts, the theory of equalized earnings obtains. So far at least as union mines are concerned, the Commission finds no attempt to compensate a mine with unfavorable conditions by establishing lower wages for the workmen. The mine must pay the general scale of the district at the expense of reduced profits or no profits or finally going out of business, if it cannot operate in competition at those rates.

An interesting application of the contrary principle occurred during the time Mr. Armstrong was in control, where he insisted on one mine granting the full increase agreed on by other mines, although the men's earnings were already exceptionally high; so that the mine should not have an advantage in the market in a comparatively lower price for its product.

Wage rates, therefore, are the resultant of various factors—the theory of competitive equality for operators, the theory of uniform earning capacity for the workmen, the bargaining strength of unions and operators, the condition of the labor market and other general economic forces. Complications in the scale increase the difficulty of arriving at settlements of this vitally important question and it should be the aim of all concerned to work towards simplification and to make the rate commensurate with the skill, experience and energy required.

19. General Discussion of Agreements

In studying the various agreements in existence or that have been in existence in this province, the Commission has been very much impressed by the lack of clearness in these documents. At times, it would seem that the obscurity was intentional, one side or the other hoping under more propitious circumstances to place a construction on the clause in question that would be more favorable to their views. At other times, the obscurity seems to arise from copying into later agreements phrases that have lost their meaning. Innumerable instances could be given of this lack of clarity in expression but one outstanding example will suffice. The last agreement printed in full between the Western Canada Coal Operators' Association and District 18 U.M.W.A. contains the provision: "Oil: present conditions to prevail." As applying to one mine at which the point came before the Commission, this means that for storage battery electric lamps the miners are to pay 1% of their earnings. The difficulty does not end in tracing the relation between the expression used in the agreement and the fact as above set out; because one party contends that this 1% of earnings, established when the electric lamps were first introduced on the principle that the miners were being relieved of the oil which they previously had to purchase for their oil lamps, was only to last until such lamps became general in the district or until the mine was compelled to employ them for safety

purposes. The other side to the bargain denies all knowledge of any such arrangement; so that in the result this completely unilluminating provision in the agreement, copied year after year into new agreements, has merely been the perpetuation of a disagreement.

The Commission cannot overestimate the advantage which it thinks would be gained by having agreements so definitely and clearly expressed that no dispute could possibly arise as to their meaning. It seems altogether too bad that, after both parties have reached a common basis, perhaps after months of costly labor disturbances, that basis should be put down on paper in such a way as to ensure trouble in the future. It would be a great advantage if all such documents had to be approved as to form by some independent body, with the object of seeing that the expressions used were clear-cut and unambiguous.

The Commission took considerable pains to endeavor to ascertain the precise effect of these agreements. As shown above, at first they were executed between the district organization and the individual operators; later, between the district organization and the association of operators; and now for the most part, between the operators and the local unions or individual employees. The legal status in each of these cases would appear to be slightly different. The Commission is informed that neither the Western Canada Coal Operators' Association or District 18 U.M.W.A. were incorporated bodies or could be sued. On the other hand, where the operating company has signed the agreement it would appear to be binding on it and where, as in some cases, the signature of the individual workman is taken on a card, stating that he agrees to abide by the conditions of the agreement referred to, there would seem to be an equal legal obligation on that workman. In their general form, then, when executed between associations and district organizations, the expression used in the evidence regarding them would seem to be justified; viz., that they are simply mutual understandings expressed in writing and are not legally enforceable agreements. As has happened on a large scale in the recent adjustment, the workmen withdrew from the U.M.W.A. and the operators resigned from the Association and thus completely nullified the existing agreement.

In any case, the agreement simply fixes certain wages and working conditions *if the mine is operating and the workman is working at that mine;* in other words, the operator does not agree to operate his mine and the workman does not agree to continue to work for him. While this is undoubtedly true as a bald statement of the position, both parties are expected to do their utmost, the mine to operate and the workman to work under the agreement. It was contended at the hearings that, so far as the men were concerned, twice in the year 1916 and again in 1920, in spite of existing agreements, they came back to the operators saying: "We agreed to do this but find we cannot." On the other hand, union officials complained to the Commission that the operators made no attempt to put into force the agreement of October 1924 and to operate their mines under it. To this the

operators replied that they could get no business at the price they would be compelled to charge for their coal. There seems to be nothing to determine the exact degree of tightening of the belt by the workman or incurring of losses by the operator at which this step is taken. Probably it is determined rather by the respective parties' estimate of their chances of success in the attempt to improve their position.

While the evidence of the past forces the Commission to record what has just been stated, it must not be thought that agreements are regarded lightly by either side. On the contrary, the feeling of the sanctity of agreements should be developed to the utmost. Like many of the unenforceable or even unwritten understandings that form the basis of everyday intercourse, business can only run smoothly if they are observed. On the strength of the agreement and the obligation which he knows that his men feel to carry it out, the operator makes definite contracts for the delivery of his product. On the other hand, the men have an equal right to feel secure in the conditions and rate of recompense for their work, subject only to circumstances which are beyond the control of either party. It might be possible to go beyond this and make an agreement that would be absolutely binding on both parties, with certain penalties, but also with provision for readjustment under certain defined circumstances. Meantime, however, the present type of agreement is, the Commission believes, regarded by both parties as calling on them to go to great lengths in order to carry it out in its entirety, if for no other reason than that this would be the best policy to ensure a square deal on both sides for the future.

Before leaving the subject of agreements, the present lack of uniformity may be pointed out. In the larger mines of the province, some agreements have been made for one year and others for three and on varying dates within the year. The uniformity, which resulted from having an association of operators dealing with a district organization of workmen, has thus completely disappeared. The same lack of uniformity has now arisen in regard to rates of pay and many of the working conditions. It is contended by some observers that this lack of uniformity has in it the seeds of future trouble on a large scale. These observers state that the mine workers of Alberta, in keeping with the training of the past twenty years and in keeping with the practice elsewhere, will undoubtedly take a favorable opportunity to act again collectively. It is to be hoped that, should such an event occur, machinery can be provided to minimize the difficulty of re-introducing uniformity in the agreements. The U.S. Coal Commission took the view that the establishment of a policy of complete district autonomy in the negotiation of new agreements, as advocated by some operators, would result in great turmoil and a renewal of fierce competition between districts that must inevitably lower standards. It suggests that there should be a system of national negotiation of the main agreement, with district variations, to avoid such standard-cutting wars between districts and yet accord adequate flexibility to meet necessary district conditions.

This Commission considers that, whatever the causes which have produced the present condition in Alberta, it is not one which makes for the greatest stability in the conduct of the industry here. The remedy, however, lies in the hands of the operators and the workmen of the province.

20. Non-union Wages and Working Conditions

The Commission finds that it cannot attempt to give in this report an account of the rates of wages and conditions obtaining in the non-union mines of the province. Requests for this information were included in the questionnaires and replies were received from a number of such mines. To report them, however, would require a separate paragraph for each mine and leave no general impression on the reader. It would also omit the great majority of such mines, which are the small mines that did not receive the questionnaires or did not reply to them. In these mines the rates vary not only from mine to mine and from district to district but from season to season. The actual rates could be obtained through the auditors of the Compensation Board in the course of their work examining the payrolls of these mines. Only in some such way could a comprehensive statement be compiled which could safely be put forward as representing all the non-union mines of the province. While relatively unimportant as to the output involved, these rates have at times a very distinct bearing on the general wage problem of the province and it would be well if accurate information regarding them were obtained in some such way as that suggested above.

The evidence before the Commission was that the non-union wages averaged from 50c to $1.00 a day less than the union wages and such replies as were received by the Commission would substantiate this at the time they were made. What the relation is at the present time, on the reduced scale in all the mines, the Commission is unable to say. The Commission, therefore, recommends that, in addition to publishing the union rates, the Mines Branch should obtain through the Compensation Board, at least for certain standard classes of workmen, the prevailing non-union rates of pay and publish them, with an indication of their relative importance as determined by the output of the mines where these rates obtain.

The U.S. Commission found that the differentials in non-union fields there were even more complicated than within the union fields; that there was a marked tendency in the non-union fields to cut the rates in bad times and therefore operate more steadily; that in good times the rates tended to come up to the union standard; and that these fluctuations in non-union rates made business swing back and forth between the union and the non-union fields. The U.S. Commission found it impossible to show either the existing rates or the trend of rates in the non-union field in the form of summary tables and recommended the compulsory collection and publishing of rates and rate changes in the non-union fields.

21. Wages in Excess of General Scale

Investigation by the Commission has shown that, with very few exceptions throughout the province, rates of wages higher than those called for in the agreement do not obtain. One exception was in the mines of the Wayne District, where drivers were paid 25c to 30c a day more than drivers in other mines and the helpers and unskilled labor underground were paid the same as the skilled men. This condition appears to have arisen through certain mines in the district offering more attractive rates in order to get men from other mines. It was then continued as a punitive rate by order of Mr. Armstrong. Although the clause is no longer inserted in the agreements, it was an established custom throughout District 18 that, where higher rates have prevailed, they should be maintained. This rather extreme case of a disparity in rates between neighboring mines illustrates very well the difficulty that can be caused by such a practice. Once established, it is very hard to discontinue and is a cause of perpetual discontent to workmen holding similar jobs in other mines.

22. Comparison with Mining Wages Elsewhere

The Commission has endeavored to make an examination of the comparison between the rates of pay in the mines of Alberta with those prevailing in the mines in other parts of Canada and the U.S., as well as with those of other occupations in this province. Since the following table was compiled, there may have been wage changes in some of the places given for the purposes of comparison. Such changes are occurring with more or less frequency so as to make it difficult to keep a comparison up to date. It will be interesting, however, to peruse the following which was correct at the time it was compiled:

TABLE 101—*Comparisons of day rate scales in various mining fields of Unit tates and Canada.*

ssification, Day Labor—Inside.	Crowsnest Scale Alberta	Nova Scotia	British Columbia	Illinois, Indiana, Iowa, Ohio, West Pennsylvania	Montana	Wyoming	Washington	Eastern Tennessee and S.E. Kentucky	
ners	$5.40	$4.60	$5.20	$7.50	$8.39	$7.92	$7.50	$4.84	$7
mbermen	5.40	4.30	5.20	7.50	8.39	7.92	7.50	4.84	7
achinemen	.....	4.30	.....	8.37½	8.50	8.30	.....	5.40	8
ivers	4.90	3.70	4.70	7.50	8.18	7.92	6.25	4.44	7
bourers	4.45	3.65	4.45	7.25	7.97	7.78	6.00	4.20	7
Day Labor, Outside—				Per Mo.	8.07 to	Per Mo.			
aulage Engineers	4.90	4.60	4.70	220.31	8.60	237.00	6.50	4.84	8
acksmiths	5.50	4.45	5.30	7.92	8.60	8.30	7.00	5.00	7
rpenters	5.50	4.25	5.30	7.92	8.50	8.00	7.00	4.84	7
achinists	5.50	4.60	5.30	8.70	8.60	8.06	6.75	.....	...
remen	4.45	4.05	4.25	7.25	7.92	7.52	5.90	4.04	7
bourers	4.20	3.50	4.00	6.75 to 6.85	7.45	7.04	5.00	3.72	6

23. Comparison with Wages in Other Occupations

The Commission is indebted to Walter Smitten, Commissioner of Labor for the Province of Alberta, for the following comparative statement of daily wages for an eight hour day in certain standard employments in Alberta. The list, as given by Mr. Smitten, did not include miners and a column has been added, showing the pay of workmen of a similar type employed around a mine. For example, the rate for a carpenter in 1925 is given as $6.40, the mine carpenter coming under the $5.50 rate. A general laborer is given as $3.60 and mine laborer $4.00 to $4.20.

TABLE 102—*Statement of average daily wages paid in Alberta during years* 1921, 1922, 1923, 1924 *and* 1925 *for an 8-hour day in standard employments.*

Employment—	1921	1922	1923	1924	1925	
					General	Mine
Carpenters	$7.20	$6.40	$6.40	$6.40	$6.40	$5.50
Bricklayers	9.20	9.20	9.20	9.60	10.00	
Plasterers	9.20	9.20	9.20	9.60	10.00	
Plumbers	8.00	7.60	7.60	7.60	8.00	5.50
Sheet Metal Workers	7.20	7.20	7.20	7.20	6.80	
Electrical Workers, Bldg.	7.20	7.20	7.20	7.20	7.20	5.50
Painters	6.40	6.40	6.40	6.40	6.40	
Stonecutters	8.00	8.00	8.00	8.00	8.00	
Laborers, Bldg.	4.40	4.40	4.40	4.40	4.40	
Laborers, General	4.00	3.60	3.60	3.60	3.60	4.00-4.20
Blacksmiths	6.80	6.00	6.00	5.60	5.60	5.50
Machinists	6.40	6.00	6.00	5.60	5.60	5.50
Boiler Makers	6.80	6.16	6.16	5.60	5.60	
Compositors	8.00	8.00	7.60	8.00	8.00	
Pressmen	8.00	8.00	7.60	8.00	8.00	

An examination of the above table, in comparison with the day wage schedules for miners given earlier in this chapter, will show that the decrease in miners' wages was much more marked than those of most other trades, with the result that the advantage of the mine workman has, on the average, largely disappeared.

During the hearings of the Commission, much was made of the fact that, while a common laborer was getting an average wage of from 30c to 35c an hour, a similar workman employed at a mine was getting 72c an hour. It will be seen that this disparity has now been reduced, general laborers outside being listed at $3.60 a day as against mine laborers from $4.00 to $4.20 a day, that is, on the basis of an 8-hour day, 52½c an hour. The Commission learns, however, that the present rate for section men on the railway is 30c to 36c an hour, also for an 8-hour day; so that the comparison is between $4.20 for the mine laborer and $2.40 or $2.88 for a similar workman employed on the railway track alongside. So far as that class of work is concerned, therefore, the disparity is still very great and was much complained of by operators in giving evidence before the Commission. It should be noted that the above does not include contract miners and does not bring in at all the element of steadiness of employment. After all, what is of most importance is not the comparative day rates but the comparative monthly or yearly earnings.

24. Payment Fortnightly or Semi-monthly

Several operators contended before the Commission that the change from semi-monthly pay to fortnightly pay made work and trouble for them out of all proportion to any advantage it could possibly be to the workman. For the latter, semi-monthly pay only meant that twice a year he would have to go three weeks between pays; for all the rest of the year he would be paid every second Saturday as at present. The case for the operators' contention consists of the difficulty in agreeing payrolls, made up every two weeks, with returns to the Government Departments and ordinary business transactions conducted on a monthly basis. In a practical way it is impossible to make the two work together. To arrive at monthly costs, for instance, the payroll at the beginning of the month and another payroll at the end of the month have to be apportioned on some arbitrary basis, which may make the resulting figures quite inaccurate. On the other hand, the men's contention is that they have fought for a long time to get the fortnightly pay and would fight just as hard to retain it. Indeed several put forward the demand for weekly pay, although this may have been done to counteract the request for a return to twice a month.

The Commission is fully alive to the difficulties occasioned by this legislative provision. It would seem that something must be done to get over the difficulty of requiring Government returns by the month, when wages are paid every two weeks. Either one or the other must be changed. Either the men should concede the point and agree to take their pay every two weeks, for the bulk of the year, but twice a year going three weeks or the only alternative would seem to be to adopt the scheme proposed of having a calendar year divided into thirteen reporting periods of four weeks each. Each such period would then contain two complete pay periods. The adoption of this alternative, however, would bring renewed conflict with the established monthly basis in the general business customs of the country.

25. Non-payment of Wages

The mining industry in the Province of Alberta seems, more than any other, to have afforded in the past instances of operators who failed to pay their workmen's wages. Many recommendations were put before the Commission to meet this difficulty. One that seemed to have some merit was to require a deposit with the Government of an amount sufficient to pay two weeks' wages. The difficulty with this plan would be the burden imposed on all the operators of the province, large and small, by having that much capital tied up. Unless a deposit of more than two weeks' pay were required it would only partially meet the case because other wages would be due before the deposit could be called on. As an alternative to a universal demand for such a deposit, it was suggested that the Government be given power to call for it, wherever it was thought wise to do so. This was open to the objection that an attempt would be made to hold the Government

responsible for failure to invoke such powers. A similar objection exists to any of the plans for getting the Government to inquire into the financial standing of Companies, before they were given permission to operate. Apart from the difficulty of getting a statement truly representing the Company's position and especially continuing truly to represent it with the passage of time, any such scheme would throw too much responsibility on the Government and a similar attempt would certainly be made to hold it liable for the payment of wages by any Company, to which it had given a license to operate. It must also be remembered that it is difficult to legislate for one particular industry even though, as stated above, that industry has in the past been especially subject to this particular trouble. The workmen in other industries could put forth a very good claim to a similar measure of protection.

The Mines Act was amended at the last session to call for certain returns as to the payment of wages and to provide for the appointment of a receiver. To avoid repetition, a discussion of this is reserved for the chapter on Legislation.

E. SUNDRY WAGE AND WORKING CONDITIONS

Reference will now be made to a number of details of the wage and working conditions of the coal mining industry in Alberta. Some of these are dealt with in the agreements; some are matters of established local custom; too many of them have not yet been definitely or finally settled and so constitute a real source of friction and discontent. For the most part, the Commission can only describe these features of the labor relations within the industry, without attempting to adjudicate on the rival representations made with regard to them. Such an attempt would involve much more prolonged and widespread investigation of each item. The references here made may, nevertheless, serve certain purposes. It is important to give for the information of the Government an explanation of the various terms employed and a description of what is involved in these various features of the day to day relationship between operator and workman. The mere enumeration of them should convey some idea of the complexity of that relationship; but what the Commission wishes to emphasize above all is the supreme importance to that peace within the industry, which is its prime need, of so managing the day to day relationship as to reduce to a minimum the friction and discontent over these conditions. Too often they are disregarded and disputes concerning them allowed to accumulate. It is just this accumulation of comparatively petty grievances that adds the bitterness to the periodic struggle over the making of a new agreement. If everything else could be disposed of currently and nothing left to be determined in the new agreement but the rate of wages, there would be far more chance of a dispassionate and prompt settlement of that major item.

26. Minimum Wages

This expression is used in two senses which must be carefully distinguished. The reference here is not to the broad question of minimum or living wages for all in the industry but to minimum wages in a narrower sense. When work is being done on a contract or payment by results basis, the rate fixed is supposed to be such as to enable the workman, who is reasonably skilled and diligent, to make what he would describe as "decent wages." A contract miner is generally supposed to work a little harder and thereby earn a little more than the man on day work. As pointed out elsewhere, these contract rates for a new mine are established after actual trial; but conditions over which neither the operator nor workman have any control, such as variations in the seam of coal, may occur to upset all these calculations. To meet this condition, a minimum wage clause occurs in most agreements; for example, the clause in the agreement of June 10th, 1920, reads as follows:

> "Minimum rate: Where a miner's working place becomes deficient, owing to any abnormal conditions, or where coal in any district becomes so hard preventing him from earning the minimum wage of $6.35 per shift, the Company shall pay him a sufficient amount to secure him the set minimum, providing he has done a fair day's work; provided, however, regard shall be had to the pay period in which the deficiency is claimed. This shall not apply where work is performed in two separate places one being normal and the other abnormal."

If the two parties to the agreement had a definite idea of what they meant by the above clause, they cannot be said to have succeeded in expressing it. The phrase "provided, however, regard shall be had to the pay period in which the deficiency is claimed" is quite meaningless as it stands. Apparently what it intended to convey was that the earnings for all the days of a pay period were to be averaged up and only an average deficiency over the period was to constitute a claim against the Company under the clause.

So, too, with the next expression: "This shall not apply where work is performed in two separate places one being normal and the other abnormal." This should not be a separate sentence which makes it govern the whole clause. The meaning is that for purposes of averaging, as just explained, each such place shall be considered separately, i.e., excess earnings in a normal place shall not be used to make up the deficiency in an abnormal place.

It will be seen, too, that the whole clause bristles with opportunities for dispute. It contains no definition of abnormality, no definition of hardness of coal and no definition of a fair day's work. Granted that such terms are difficult to define, the fact remains that these ambiguities and uncertainties are a fruitful source of dispute over this very provision. The whole of one afternoon's sitting of the Commission, in one particular place, was absorbed by complaints as to the interpretation of this clause. In the new agreement at that mine, this clause has wisely been done away with; conditions are well enough established for them

to put in precise definitions and provide allowances for decrease in the thickness of the seam, increases in the bone partings and otherwise make a definite agreement in this matter. Under the old clause, apart from the needless ambiguities as to a pay period and the two working places one normal and one abnormal, disputes as to interpretation were supposed to be taken up through the regular machinery for adjusting differences under the agreement and were very commonly so treated.

The suggestions of the Commission in this regard are that this particular clause should be drawn up with the greatest possible care; and that all questions arising under it be settled promptly one way or the other. Some such provision is a necessary accompaniment of the contract wage system and it is a question whether it should not apply to other things than abnormal natural conditions in the seam. A contract miner, as the evidence indicated to the Commission, can be prevented from making a minimum wage for a fair day's work by other things than variations in the coal seam. Barring accidents where all must share the disadvantages and loss, it is not fair that a contract miner should suffer by reason of failure on the part of the operator to keep up a proper supply of mine cars, timber, ventilation and all the various services to the man at the face.

An interesting phase of this minimum wage question developed during the session above referred to. It appeared that at the mine in question, which was one of the first established in the province, there are a considerable number of old men on the working force. The union representatives gave as one of the reasons for their not having tried to enforce the minimum wage clause, as they saw it, that they feared the consequence might be to force a number of these older men out of employment. In other words the failure to earn the minimum was due not to any abnormality in the place but to the working capacity of the man. He had for him done a "fair day's work" but he had not produced enough coal to give him the minimum wage. It seems to the Commission that this feature of the situation could be taken care of by granting special permits for men to work at less than the minimum wage. Such permits are a feature of some of the schemes for establishing minimum wages in the other sense of a minimum for all employed in the industry.

27. No Contract Rates

Several witnesses before the Commission urged the abolition of the contract rates and that all payment be made on a day wage basis. Those in favor of this change thought that four-fifths of the disputes were over the fixing or adjusting of contract rates. All that has been said above about the difficulty of keeping conditions uniform is adduced in favor of the change. There were not only disputes between the management and the men but dissatisfaction between man and man. The wide disparity shown in the record of contract earnings is due, these witnesses claim, to some men having better places and better conditions and charges are freely made of favoritism in the allotting of such places. Those

who hold the opposite view maintained, just as strongly, that there would be more instead of less dissension among the workmen. Opinion among the miners themselves is divided; a number welcoming the opportunity given by contract rates to increase their earnings by increased skill and industry.

The most obvious disadvantage of such a change arises from the conditions under which mining is carried on. The men are scattered and are not under observation. The problem of supervision would be still further complicated by the irregularity of the natural conditions. Unless the "boss" were working right with each man, it would, in many cases, be impossible to prove whether, under the conditions which developed that day in the character of the seam, the nature of the roof, etc., etc., the workman had or had not done a fair day's work. Superadded to this would be the difficulty, even if conditions were constant, of both sides agreeing and continuing to agree as time went on as to what was a fair day's work. It is conceivable that, for a time at least, the standards set by the contract system might persist in the minds of both parties; but common sense would indicate that such standards would tend to be lowered under a wholly day wage system. The remedy if a man were found not to be doing a "fair day's work" would be to discharge him for this cause. This is one of the rights expressly reserved to the Companies in the agreements; but there have been strikes over just such discharges and such disputes might be expected to increase very greatly under a wholly day wage system.

Instead, it is probable that the contract system, with proper safeguards, might very well, in fairness to all parties, be extended to cover more of the operations in the mine. The ideal would seem to be found in some plan which preserves the feature of reward for skill, experience and industry.

28. Method of Payment of Contract Men

The constitution of the U.M.W.A., as quoted above, includes among its objects the demand that all coal be weighed before being screened, on the basis of 2,000 lbs. to the ton. The present condition in the province is that, with two major exceptions, contract miners are paid by the ton or by the car, some on run of mine and some on screened basis, some on a long ton of 2,240 lbs. and some on a short ton. In the two exceptions, which are both large mines, payment is made by a measurement or cubical basis; that is, on the basis of the space from which the coal has been extracted and not by weighing or measuring the coal thus won. As with the other items in this part of the report, the Commission can only record the claims made for and against this cubical measurement basis. The workmen expressed dissatisfaction and a strong desire for the tonnage basis because, by that means, they believe they would be paid more accurately for what they do. The operators stated that to make the change would involve an alteration of their entire system of mining. Their pitching seams are worked by a series of main angles and back angles, all of which run the coal down by gravity to a chute in the haulage

way. At times, as many as 8 or 9 back angles run the coal to the one main chute from which it is loaded out. Several pairs of men are thus dumping their coal into the same chute and, if the total were weighed and divided among them, there would be the obvious difficulty of having all agree that the division was fair, with the added difficulty that, in part of the seam being worked to this chute, there might be an "abnormal place" for which the Company should be paying an addition to make up the minimum wage. Moreover all the coal coming from the same chute does not carry the same rate of pay. It may be from a room or from a cross-cut or sometimes from a room and a pillar. These operators, therefore, make out quite a strong case for the view that a tonnage basis would force them to change to a system of providing a separate chute for each miner, in other words, to abandon their present scheme of main and back angles by which they maintain they reduce the breakage of the coal and get a safer and larger extraction of it. As against this, the contention is that other mines with similar conditions are managing to weigh the coal for the contract miners; but, in some cases at least, they find it necessary to use a combination of the two methods, apportioning the tonnage between the contract miners, placing coal in the same chute, by having recourse to the cubical measurement basis. As stated above the Commission is not prepared to make a definite recommendation on this matter.

29. Deadwork

It is not possible to give a definition of this term which would be of universal application. Broadly speaking, however, it covers all work done by the miner which is not directly productive of coal. It includes such operations as timbering, track laying, brushing, taking down and stowing "clod," extra labor for narrow work such as driving entries and cross-cuts, setting "McGintys," filling cars with water, etc., etc. For the most part, an elaborate scale of remuneration for deadwork has grown up at each mine and is embodied in the agreement. The ordinary contract rates are for coal won from pillars or from rooms of standard size; for "narrow work" it is usual to pay in addition "yardage," that is, so much per lineal yard of an entry of such and such a height and width. Often the cross section is not defined in the agreement but is left to the established custom of the particular mine. The rate for timbering is usually per set of standard dimensions; for track-laying per lineal yard, etc., etc.

There are three main ways of paying for deadwork each with advantages and disadvantages:

(*a*) By specified contract rates for defined operations;
(*b*) By the time consumed on an hourly basis;
(*c*) By special bargains for particular pieces of work.

As an example of the complexity which may be reached by carrying Method (*a*) to its logical conclusion, one agreement, contained in the exhibits, sets out at least twenty different contract rates for dead work. The disadvantages of this method are

the trouble of fixing and amending so many individual rates and the difficulty and labor involved in measuring and recording the work done under them. The great advantages of this method are that the bargain is definitely struck and causes of dispute during the currency of the agreement are reduced to a minimum. Under Method (*b*) the difficulty is to determine accurately the time consumed or, in the alternative, the time which the pit boss considers should have been consumed in doing the particular work. Too often when a miner turns in the statement that on a particular day he spent a certain number of hours doing Company work, the matter is by no means ended but develops into a wrangle which is finally settled to the satisfaction of neither party. Method (*c*) cannot always be applied in the exigencies of the case but, where the miner and pit boss can agree in advance on the amount of money or what is the same thing the number of hours that will be allowed for a particular piece of deadwork, not covered by the specified rates, it avoids disputes and trouble in the future.

Throughout parts of the lignite field, a special custom has grown up of having a blanket rate to cover loading coal and an ill-defined proportion of deadwork. The Commission agrees with the representations made to it in this regard that it would be better to follow the practice in other mines and fix separate rates for the straight mining of coal and for the various operations involved in doing the deadwork. If the proportion of the one to the other remained constant, there would not be the same need for separation but, in the circumstances as they exist, it is clearly impossible with a blanket rate to keep payment on a fair basis in relation to work done.

As may readily be imagined from the multiplicity of operations involved and their character, this whole question of payment for deadwork is a constant source of dissension between operators and workmen. It is something which must be settled for each individual mine but, in the interest of harmony within the industry, the necessary time and study should be given to it by both operators and workmen in order to readjust the present inequalities between jobs, between mines and between districts. Above all there should be prompt action in taking up, through the established machinery, all disputes and grievances arising in this connection.

30. Length of Working Day

Since the 1st April, 1919, the regular length of the working day both above and below ground for all jobs has been fixed throughout the mines of the province at 8 hours. Previous to that many of the outside men worked 9 and 10 hours and certain 24-hour operations were divided into two shifts of 12 hours each. For workmen below ground, The Mines Act provides that, subject to certain exceptional conditions, no workman shall be below ground in a mine for the purpose of his work or of going to or from his work for more than 8 hours during any consecutive 24 hours. It may be noted that in the mines of Saskatchewan which compete with Alberta mines in certain markets the miners work

10 hours per day. On the other hand as will be seen by the quotation above the objective of the U.M.W. of A. is a 6-hour day.

The Commission has no recommendation to make in this matter at the present time.

31. Multiple Shifts

In the mines of Alberta, it is the rule to work single shifts on the actual digging of coal and double and treble shifts are employed for development work only. Theoretically, with an 8-hour day 3 shifts would be the most economical method of working, forming a ready means of increasing output and reducing overhead costs per ton; but the mine workmen prefer the day shift rather than the afternoon or the night shift. They also prefer to work continuously at their own place without the intervention of another shift of workmen. No two sets of miners attack the coal face in the same way. In England, for example, this is recognized in many mines by paying a higher tonnage rate where the coal is worked double and treble shifts. As to the preference for the day shift, a similar problem in other industries is met by additional compensation for night work as against day work. With the present over-development of mine capacity in the province, there is no immediate prospect of the introduction on a large scale of double and treble shifts.

32. Working Overtime

A number of complaints were made to the Commission, in the course of its hearings, that, in spite of the provisions of The Mines Act, certain operators were in the habit of working overtime. The Commission is not in a position to verify these particular complaints. The provisions of the Act seem adequate and if the exceptions in it are sometimes strained by individual operators the remedy is in the hands of the workmen by lodging a complaint with the Mines Department. On the other hand, this provision undoubtedly works a hardship on the operation at certain times. It is all very well to say that, if a mine is efficiently managed, the room can be cleaned up before the close of the shift so as to have it ready for the cutting machine; but this cannot always be managed and, because the little overtime work necessary to clean it up cannot be done, that room must lie idle the next day. The general remedy for this is to have alternative places or, at least, three places for two men.

33. Man Trips

This means the provision of special trips of the mine cars to take the workmen to and from the face. In extreme cases, it may take as long as an hour and a half for the journey each way, if the man has to walk. It is thus not only a convenience for the men but a saving of time for the operator and something of the kind is generally arranged. The suggestion made to the Commission at its hearings was for the extension of this or its introduction where not now in effect. While it has the above general

advantages, there are difficulties in working it out in practice. At one mine, which built special cars for the purpose and arranged to make three or four special trips, it was found that, especially coming out of the mine, the men did not wait for the time of the trip but came straggling out when they had finished what they considered a sufficient day's work. With the stabilizing of the industry and steadier operation, the provision of such man trips may be expected to increase. It is one of the ways in which an operator can show consideration for the wishes of the men.

34. Over-crowding

The only complaint on this score that reached the Commission was in respect of certain mines in the lignite field. It was stated by certain of the workmen that this had become more prevalent since the flat rate bonus of $1.17 a day was cancelled. The operator seemed to think that, not having to pay except on the basis of coal produced, it would increase his production to have more men in the mine, even though the result might be that the earnings of individuals were reduced by the overcrowding, with the natural result that the available supply of mine cars per man was lessened. It is obviously futile to put men into the mine beyond whatever be the limiting factor in the chain of production and it is a reflection on the efficiency of the management of any mine where this takes place.

35. Inexperienced Workmen

Numerous complaints were made to the Commission regarding the use of green men in the mines of the lignite field. It was represented that such men did not produce much themselves but interfered with the earning power of experienced miners. A circumstantial account was given of one fatal accident which was attributed by the witness to the fact that the companion of the injured miner lacked the experience to do what might have saved his life. The chief complaint about such men was the accidents they caused and particularly the smoke they produced, by not regulating their work in a proper manner so as to fire their shots at quitting time. In the opinion of some of the witnesses the use of green men like the overcrowding had increased with the abolition of the $1.17 a day. The operators were not now so careful as to the ability of the men they send below ground. It is undoubtedly true that an inexperienced workman can be a great source of danger to other workmen in the mine. The difficulty is to arrange for new men to get the necessary experience especially since the "back hand" system was abolished. While this system was generally discontinued about 1910 or 1911, it persisted in one mine at least until the year 1914. There is no suggestion that it be re-introduced but without some such arrangement the difficulty persists of training new men as miners.

Arising out of this complaint comes the suggestion of requiring a certificate of competency before any man can be employed underground at the coal face or doing work that requires skill.

such as timbering or brushing. This would be a miner's certificate and not include other workers in the mine. There is such a provision in the British Columbia Act; but in that province all the mines are of a fair size. The objection here has been the impossibility of imposing an onerous condition on a great number of the smaller mines especially under the pioneering conditions. In Great Britain, no such certificate is required but there the workers grow up in the mine, beginning at an early age and progressing from one job to another; and they are not put at jobs requiring skill until they are able to do them. On the facts as presented, this Commission believes that a *prima facie* case has been made out for instituting in this province a system of certificates of competency. There should be a special conference of operators and miners with the Government to determine the details, such as the standards to be set, the composition of the examining boards, fees, penalties, special temporary permits in certain circumstances, etc.

36. Absenteeism

By this term is meant the absenting of themselves from work by men who have no good excuse for doing so. The possibility of its occurrence is recognized in the agreements and the following clause is usual:

> "When any employee absents himself from his work for a period of two days, unless through sickness or by first having properly arranged with the pit boss or foreman and obtained his consent he may be discharged. All employees whose absence would cause any stoppage of work must, before absenting themselves, properly arrange with or notify the pit boss or foreman for or of their absence, otherwise they may be discharged. Any employee who habitually, to the extent of five days per month, absents himself from work may be discharged."

It is naturally difficult to distinguish in practice between voluntary and involuntary absenteeism. If conditions become disagreeable, such as a wet place, a tendency to rheumatism is a frequent plea for absence. The United States Commission reports that a tendency to absenteeism is undoubtedly encouraged where wages are relatively high so that a man can satisfy his needs in a short time week. In special circumstances, there may be the desire to limit earnings for fear of provoking an attempt at wage reduction. The very irregularity of mine operation is apt to develop the habit of intermittent work. Indeed after long enforced idleness there is an actual lack of physical condition to stand steady work. How serious this can become appears from the report of the United States Coal Commission which cites one Company where absenteeism ranged from 10% to 14%; that is, that proportion of the normal working force was absent from this cause alone. From what this Commission has ascertained, absenteeism is not prevalent in Alberta mines to anything like the extent reported above.

37. Sundry Special Customs

The right to choose one's own partner, the order of preference on new and more favorable work, the privilege of drawing a pillar after having driven the room are all instances of special customs and privileges, which may be the cause of controversy between the management and the men. The latter are not always willing to consider the difficulties of the management in conforming with such customs. For example, it may be some time, even years, after the rooms are driven that the pillars come to be drawn and it would be a very complicated matter to keep track of who was to do the work under such a custom.

38. Bone in Coal

Allowance for partings in the seam filled with foreign matter —bone—and the removing of it from the coal are a constant source of dispute. The rate will have been made on the assumption that there is no such impurity or that the bone is of a certain thickness. Agreements should be made flexible to take care of variations in this matter.

39. Lamps

One dispute, as to whether lamps were or were not to be charged for, has been referred to above in discussing clauses in agreements. Lamps in bad order, therefore giving a poor light or even failing to last the shift were some of the complaints made to the Commission. A fuller reference to this question will be found under the appropriate section of The Mines Act in the chapter on Legislation.

40. Weights

At present there is an annual inspection of the scales at coal mines. More frequent inspections might be made by the Dominion Government Weights and Measures Inspection Service but the expense would be high if it involved special visits to individual mines. The annual inspection is clearly not sufficient under the conditions, because of accumulations of dirt, snow and ice, the mechanism of the scale going out of order, probably through the platforms and timbers not being built firm enough to carry the heavy loads, etc. Test weights are kept at some of the mines and one of the recommendations to the Commission was that each mine be compelled to keep 1,000 pounds in such weights for the purpose of testing the scales. The Commission is not prepared to recommend this because the presence of the weights alone is not sufficient. If anything is found to be wrong, it requires a thoroughly competent man to put it right. Of course, the use of the weights would indicate the need for adjustment; but this would probably be apparent to experienced men from the results of weighing the cars of coal themselves. Indeed, the trouble may only develop under the full load so that a test with a smaller weight is not conclusive. In the case of the mines supplying the

railways, a test car about the full weight is taken to the various weigh scales accompanied by a Government Inspector and an Inspector for the railway.

The recommendation of this Commission is that the present inspection be made more frequently. It should be made at least every three months when the mine is working. The check weighman or some representative of the men should be notified to attend the test. If there are evidences of disorder in between the tests, a special inspection by the Department would seem the best remedy. See also under Mines Act in the chapter on Legislation.

41. Wash-houses

Numerous complaints reached the Commission as to insufficient accommodation in the wash-houses, lack of regulation of the temperature, lack of proper facilities for caring for the clothes, etc. These complaints were all with reference to the accommodation in the wash-houses at the comparatively small mines throughout the province, where the production was highly seasonal. The problem of caring for the peak number of men is undoubtedly difficult and the workmen must not expect too much at such times. Wash-houses are supposed to be specially inspected under the provisions of The Mines Act and will be referred to again in discussing the general question of inspection. In the opinion of this Commission, there is ground for complaint in certain quarters and improvement in the accommodation provided and the care taken of the wash-houses is one way in which the operator can greatly increase the comfort of his working force at little or no monetary expense.

42. Spare Link

In order to take care of the problem created by absenteeism both voluntary and involuntary, it is the custom in some mines to keep an extra force of men, known as the "spare link," which can be drawn on to fill the vacancies. There is considerable criticism from the mine workers and no uniform commendation of this system by the operator. If the mines are called on to work every day at full capacity, this system undoubtedly tends towards efficiency of operation and works no hardship on the mine workers. In such circumstances every place in the mine should be fully manned every day. The objection to it comes from the man who being on the spare link may or may not find his services required. This system is in full effect at only one or two mines in the province so that a discussion of it is not of much importance to the coal industry generally. The same purpose is generally served by having a force of men employed on odd jobs, that can be postponed if necessary and the men take the place of absentees on regular production.

43. The Caveling System

This is a system in vogue, for example, in the north of England where men draw for their working places every three

months. The object is to prevent one man being employed continuously in a favorable or an unfavorable place and remove the possibility of favoritism in this matter, with the resulting high wages for the favored. One thing that would militate against its adoption here is the lack of uniformity in the pitching seams and poor roof conditions making it necessary to pick out the most experienced miners for particularly dangerous places.

44. Labor Turnover

This is the term applied to the change in the composition of the working force. Men leave and new men are employed. The Commission was not able to gather statistics on this subject but may quote the report of the U.S. Coal Commission. The condition is no doubt at least as prevalent here as there. The U.S. Report states that for the year 1921 the percentage of turnover, that is the number of changes to the average number employed, for the United States ranged by mines from 7% to 459% and by districts from 30% to 224%. For the whole country the turnover percentage was 99.9%, that is to say, on the average two men alternated in each single job. Where labor turnover is excessive, it points to poor working conditions, unsatisfactory wage rates or inadequate earnings through irregularity of employment, poor supervision or objectionable community conditions. For the operator, it means lost time, lost production, damaged tools, increased bookkeeping and increased expense in various ways. For the workman, it means the cost of moving. All this is absolute loss without any compensating advantage. It should be explained that, in the figures used above, a separation from the working force was counted when the man's name disappeared for two or more consecutive pay-days. When a mine suspended operations for one or more pay periods, this was disregarded and employees who reappeared after a shut-down were considered as having been steadily employed.

45. General Service

It is impossible to over-estimate the importance of good service to the man working in the mine, in the way of timber, mine cars, the right kind of powder, ventilation, drainage, etc. Good operators are fully alive to this knowing that it means increased production as well as making for the preservation of good relations with the working force.

F. IRREGULAR AND SEASONAL EMPLOYMENT

From the mine worker's point of view, this constitutes an outstanding problem. The counterpart—irregular operation of the mine—affects the mine owner in varying degrees, according to the way that particular mine can stand idleness, the amount of the fixed charges, etc.; but to the worker on day rates or contract rates there are no degrees. Idleness of the mine means for him complete loss of earnings.

46. Extent of Problem

The magnitude of the problem is very well shown by the grotesquely irregular outline of the chart showing monthly production (Plate II). The marked valleys in that chart for the years 1917, 1919, 1922 and 1924 were due to strikes; but for the periods between strikes the outline is jagged in the extreme. A more detailed idea of the nature of this problem can be derived from a study of the facts on short time operation given in Chapter IV. Tables are there given, for each year 1921 to 1924 inclusive, of the days which 28 representative mines of the province operated at various percentages of full capacity or were completely idle. When examining those tables in this connection, it should be remembered that only the top line "Operation from 81% to 100% of full capacity" means the employment of the full working force. Examined in this way full operation is shown by the reporting mines as follows:

TABLE 103—*Days of Full Operation (81% to 100% of Full Capacity) of Representative Mines in Alberta.*

Year	Lowest Days	Highest Days	Unweighted Average Days
BITUMINOUS MINES			
1921	21	190	95
1922	13	159	89
1923	1	198	103
1924	1	116	56
LIGNITE MINES			
Divisions 5 and 6, Lethbridge and Medicine Hat			
1921	189	222	204
1922	1	150	92
1923	4	191	113
1924	50	103	76
Division 8, Drumheller			
1921	9	146	92
1922	42	142	97
1923	3	206	75
1924	34	130	82

The average, used in the above, is a flat average of the mines without regard to the number of men affected. Mines not operating above 80% are omitted because for them the problem from the workmen's point of view consists in maintaining their maximum, which is 60% to 80% of full reported capacity.

Examining idleness in the same way these mines show:

TABLE 104—*Days Idle at Representative Mines in Alberta.*

Year	Lowest Days	Highest Days	Unweighted Average Days
BITUMINOUS MINES			
1921	3	141	72
1922	21	175	132
1923	34	118	75
1924	192	233	204

Year	Lowest Days	Highest Days	Unweighted Average Days
LIGNITE MINES			
Divisions 5 and 6, Lethbridge and Medicine Hat			
1921	90	219	125
1922	148	181	163
1923	112	189	152
1924	198	206	202
Division 8, Drumheller			
1921	104	233	173
1922	126	206	173
1923	104	239	144
1924	70	228	198

It should be mentioned in passing that the figures for "number of days worked," as reported to the Mines Department and published in its annual statistics, must be considered in the light of the fact that there is no indication of the degree of operation. In older established sections of the country and with anything like steady output, it is the custom either to operate at something like full capacity or to stand idle. It is in this sense that the figures for "days worked" at mines in other countries must be construed. The Commission has found that the same practice obtains at a few mines in this province; these are either operated fully or stand idle; but for the most part, on account of the great overcapacity, the mines have to take care of the business as it presents itself and the maintenance problem is so severe that the mines cannot be allowed to stand with advantage between operating days. For example, the Mines Report for 1923 shows the bituminous mines of the province drawing coal on an average of 235.11 days in that year. From the above table, which is based on practically all of the bituminous mines, it will be seen that they only worked at from 81% to 100% of capacity for an average of 103 days; and that the highest mine only reached 198 days. The Drumheller field is shown in the 1923 Report as drawing coal on an average of 183.19 days; whereas the days of full operation, in that year, for the mines examined, averaged 75. The figures for days worked in Alberta mines, then, are not comparable with similar statistics of mines elsewhere; and are no guide in a study of the problem of irregularity of employment.

The above figures for days worked at capacity throughout the year do not tell the whole story. While not so reproduced in this report for considerations of space, returns as to percentage operation were secured from each mine on a monthly basis. A study of these returns shows that the periods of operation, at various degrees of capacity, and periods of complete idleness are so interwoven throughout the months of the year as to make it extremely difficult to apply the remedies, so freely suggested by many witnesses. To give a few examples and dropping the standard to "operation at anything over 60% of capacity," we find the following for representative mines. The year 1923 is taken because there was no strike to interfere with the record.

TABLE 105—*Days of Operation at Over 60% of Full Capacity in Each Month in the Year* 1923.

BITUMINOUS

Year 1923—	Mine A.	B.	C.	D.
January	25	25	26	25
February	14	9	19	18
March	6	2	9	10
April	6	3	10	13
May	21	19	24	20
June	9	12	16	16
July	22	25	24	24
August	27	27	25	27
September	10	15	12	11
October	2	17	9	7
November	2	14	5	5
December	17	21	19	17
Total	161	189	198	193

LIGNITE

	Mine A.	B.	C.	D.	E.	F.
January	13	17	14	15	26	25
February	20.5	23	23	18	24	24
March	7	13	13	12	23	19
April	14	7	4	4	23	.....
May	2	9	.....	.....	26	.....
June	13	2	2	.....	25	.....
July	18	.....	6	.....	16	.....
August	24	.....	22	8	27	.....
September	22	11	11	9	23	22
October	23	23	22	22	27	26
November	25	19	19	21	22	24
December	14	12	11	4	15	25
Total	195.5	136	147	113	277	165

Taking the bituminous mine which shows the greatest number of days operating on this standard, it will be seen to be out of the question, for most of the months of the year, to suggest that part of the working force should leave the mine and go elsewhere to seek employment; indeed, if the study were carried down a further stage to an examination of each week's operations, it might be found that, even for the month of October 1923, the 9 days worked over 60% of capacity were scattered through each week of that month. A sharp distinction must, therefore, be drawn between irregular employment, as exemplified by the bituminous mines, and seasonal employment, as it occurs in the great majority of the lignite mines. In the case of the latter, the periods of activity and idleness are segregated to an extent which suggests the possibility of an orderly migration of the labor force.

47. General Labor Situation in Alberta

Before dealing with this particular problem, it will be well to examine the general labor situation in the province. The Commissioner of Labor furnished valuable general information derived from the experience of the Labor Exchanges, although

these have little to do with the placing of men in the mines. The chief seasonal employments with which the Bureaus deal are the farm, the bush and the railway section gang. They recognize one group, that works section gang in the summer and bush in the winter, and a second group, that farms in the summer and goes to the bush in the winter. For railway section men, the season of employment is from about April 1st to freeze-up, conflicting at the end of the season with the demand for harvesters. These men then largely go to the bush; but some, undoubtedly, find their way to the mines. The work on the farms comprises, in order of time, spring seeding, beet thinning and hoeing, haying, grain harvest and beet harvest. The pay for spring work is $40.00 to $50.00 a month and board, but requires competent men able to handle four or more horses in a team. Spring seeding merges into summer fallowing and haying and the term of employment runs from one month to four months, with an average of about three months. For 1925, the bureaus placed 6,486 men on farms for spring and summer work. For the 1925 farm harvest they placed 17,188 men of whom about 10,000 were imported into Alberta. Harvest wages run from $3.50 to $6.00 a day, with perhaps an average of $4.00 a day, for stooking gangs and $5.00 a day for threshing gangs, in each case with free board. Normally the employment runs from August 15th to October 15th, varying, of course, with the season, with a probability of two months' employment on the average. As stated above the Labor Exchanges have very little to do with work in the mines, the men applying direct. There has been a surplus of men and the mines have not asked the help of the Exchanges. Out of over 60,000 vacancies supplied in a year, only about 1,000 to 1,200 would be for men for the mines and these chiefly in the rush season in the lignite field. Not taking into account the imported harvesters and not counting the building trades, the Labor Commissioner stated that there is a net unfavorable balance of 3,000 to 3,500 in the opportunities for work from November to March as against the summertime. This unfavorable balance is taken care of by men going to the lumber camps of British Columbia or remains as a winter problem of unemployment. On general balance, therefore, it would appear from this that the opportunities for work are greatest in the summer, during the time that the lignite mines are normally idle.

48. Suggested Remedies for Irregular Employment

Reverting now to the particular problem presented by seasonal unemployment, particularly in the lignite mines, many witnesses urged the farmer-miner combination man as a solution. One witness stated that a good many of their men had their own farms and homesteads; it suited them very well to leave the mine on the 1st March and come back just after threshing-time. The same men came year after year and last winter out of a total of 70 miners only 6 were different from the year before. The addresses of these men were kept and places held open for them, until it was ascertained whether or not they were coming in again. This particular mine had men who had worked continuously in this

way for from 9 to 14 years. Another witness stated that most of the men he let off in the summertime had their homesteads and farms right in the vicinity. When the Commission was in Drumheller in May, it was estimated that about 60% of the winter quota had left for other occupations. While the lignite operation is, thus, so largely seasonal it is by no means entirely so. Men are required for maintenance and development work and for taking care of whatever market offers. Coal for household use is being sold continuously through the summer and any mine that closes down entirely risks permanent loss in building up the market of another operator. It is admitted that the men thus retained throughout the summer get very irregular work and, while they might still make good wages by the day, it means low earnings by the month; but the argument is used that the same men have done this for years and so must feel that, averaging the winter with the summer, they are better off than they would be in any other industry or calling. They do a little market gardening and perhaps a few odd jobs.

The disadvantages in this situation are, in the first place, the difficulty of knowing just where to go to find a job on a farm when the mines close down. There may be a gap of several weeks at this time. Unfortunately, the seasons overlap at the other end and the lignite mines are starting into operation and wanting men during the time that they could well be employed in the harvest. The prevailing wages for spring and summer farm work, given above, will show that, while it is better than nothing, it is not much of a solution for the man with a home and family to maintain in the mining village. The Labor Commissioner said that not 5% of the vacancies on the farm would take a married couple and even these were limited to no children or at most one child, the limitation being set by the housing accommodation on the farm. In addition to these general difficulties and objections, many of the witnesses among the workmen expressed a strong dislike to having to work at other trades, at which, owing to lack of training and difference in physical conditions, they found themselves much handicapped in competition.

Unless and until new markets are developed to change the seasonal character of the operation in lignite mines, the solution of the accompanying problem of seasonal unemployment must, in spite of the difficulties, be sought for along the line of combining mining with some other means of livelihood. In a country such as this, with an abundance of good cheap land close to the mining centres, the farmer-miner combination should be capable of sufficient expansion to take care of a large part of the problem. Those who, by inclination or otherwise, feel themselves unfit should seek work in mines of a less seasonal operation. Another main line of attack on the problem consists in organizing the transfer of the working force from the lignite mines to the railway mines and vice versa. According to the programme outlined in the discussion of the railway market in a previous chapter, the railway mines should, normally, be at the height of their activity precisely at the season when the lignite mines are slack and, con-

versely, the railway wishes to cut to a minimum the hauling of coal for its own use at the time when it is transporting grain and moving the commercial coal of the country. No recent year has shown this balance in the two classes of production but there have been special reasons for it in each case. For the future, the railways express their desire to take from Alberta mines, during the months from the 1st May to the end of August, at double the monthly rate of the remaining eight months in the year. Why should not this excess tonnage be mined by the workmen freed by the falling off in orders at the lignite mines? To some extent this process is already at work but it should be capable of great extension if properly organized. It is true there will be difficulties of experience and qualification. The ideal arrangement would be for single men to migrate back and forth, leaving what work was offered in the respective fields to the married men with families and homes. As far as possible, men who wish to return should be assured of their former jobs; because the fear of losing these is one of the great deterrents to seeking occupation elsewhere. It will take the experience of a year or two to show, in the practical working out, just to what extent the decreased market for the coal from one field will be compensated by the increased demand in the other; but the problem is by no means as difficult as the distribution of harvest laborers which is now carried out by the Department of Labor of the province. In distributing harvest help, advance estimates of the requirements are received from hundreds of correspondents scattered throughout the province and form the basis for the requisitions for harvesters. The Commission would strongly recommend an attempt to solve the seasonal unemployment problem in a similar way and through the same agency, namely, the Department of Labor of Alberta.

For workers in the bituminous field, then, the chief hope of relief from seasonal unemployment seems to the Commission to lie in an organized arrangement for transferring them to the lignite mines. In addition, the object in the bituminous field must be to spread the available business in a more uniform manner throughout the working season and thus keep a more stable force of men regularly employed. The railways will co-operate to achieve this end and the object should be to so arrange the commercial business as to fill up the gaps in the railway orders. Perhaps something could be done by way of special price concessions to encourage the sale of off-peak coal. It is interesting to note that the United States Commission found the same problem of seasonal consumption leading to over development, where the cost of opening a mine is small, and that over development causes a short average working year for both capital and labor. They found that taking the miners of the country as a whole collateral employment is very much the exception. There were very few opportunities and not much advantage taken of those that exist. The report states, however, that "farther to the West there are localities where mine operation is quite irregular and the custom has gained some foothold of mining in the winter, and farming in the summer."

G. EARNINGS

The Commission has endeavored to secure a correct statement of the earnings of mine workers in the province of Alberta for the years 1921, 1922, 1923 and 1924. In this attempt, many sources of information have been examined. The operators were asked to submit their office copies of the income tax returns, showing the earnings for those four years of all their employees. The operators were also asked to analyze the earnings of contract miners per full shift, showing how the general average was made up, giving lowest and highest with rates in between and the approximate percentage at each rate. The Local Unions were asked to state the average yearly earnings of mine workers of every class and engaged on each job in the mines. Figures were obtained from the Commissioner of Labor. The Workmen's Compensation Board furnished full statements for the years 1923 and 1924, according to their records.

There is little difficulty in ascertaining and recording the rate of wages or the pay per shift. The factor of days worked presents much greater difficulties. At the outset, it may be well to say that the attention of the public has been caught by reports of high earnings of individual miners for single days or for short periods; and thus an impression has arisen, which is very far from the truth, as to the actual average yearly earnings of all those who are engaged in the industry. However, the rate of pay per day is the basis and may be recorded first.

49. Earnings of Day Men Per Shift

In Section 15 of this chapter, on Wage Changes, the rates were given for three classes of workmen. From this, it will be seen that, for members of the U.M.W. of A. District 18, miners on day work were paid $7.50 per day, from the beginning of 1921 until the 10th October, 1924, when the rate was reduced to $6.56. Similarly, unclassified labor underground received $6.89 a day up to October 10, 1924, when there was a reduction to $6.03; and outside labor unclassified received $6.58 to October 10, 1924, and thereafter $5.76. The further reductions in 1925 are fully set out in section 15 of this chapter.

Members of the Edmonton and District Miners' Federation started in 1921 at the rate of: Miners, $5.60 per day; inside laborers, $4.80 per day; outside laborers, 54c an hour. In December, 1921, there was a 13% reduction; in March, 1922, a further 12% reduction; in October, 1922, the 12% was restored; by the agreement effective from the 1st September, 1923, to the 30th June, 1924, the 13% was restored, bringing the rates back to those just given. After June 30th, 1924, these wages were reduced to: Miners, $5.00 per day; inside laborers, $4.50 per day; outside laborers, 50c an hour. (For the reductions in 1925 see section 17 of this chapter.) The evidence was that non-union workmen, throughout this period, were being paid from 50c to $1.00 a day less than in union camps.

50. Earnings of Contract Miners Per Shift

The replies to the questionnaire to operators, as to the earnings of contract miners, brought the following information in respect of the year 1923:

Mine A—49½% of the contract miners earned $7.50 to $10.00 per shift; 39½% earned $10.00 to $15.00, and 11% earned above $15.00.

Mine B—19.65% of the contract miners earned $7.50 per shift; 16.51% earned from $7.50 to $8.00; 15.45% earned from $8.00 to $9.00; 12.83% earned from $9.00 to $10.00; 12.19% earned from $10.00 to $11.00; 9.29% earned from $11.00 to $12.00; 4.11% earned from $12.00 to $13.00; 3.40% earned from $13.00 to $14.00; 2.42% earned from $14.00 to $15.00; 1.81% earned from $15.00 to $16.00; 2.34% earned from $16.00 to $17.00.

Mine C—1% of the contract miners earned $4.00; 2% earned $4.00 to $5.00; 3% earned $5.00 to $6.00; 8% earned $6.00 to $7.00; 17% earned $7.00 to $8.00; 13% earned $8.00 to $9.00; 14% earned $9.00 to $10.00; 10% earned $10.00 to $11.00; 7% earned $11.00 to $12.00; 6% earned $12.00 to $13.00; 4% earned $13.00 to $14.00; 3% earned $14.00 to $15.00; 2% earned $15.00 to $16.00; 2% earned $16.00 to $17.00; 2% earned $17.00 to $18.00; 1% earned $18.00 to $19.00; 5% earned over $19.00.

Mine D—31% of the contract miners earned $7.50 to $8.00; 11% earned $8.00 to $9.00; 12% earned $9.00 to $10.00; 12% earned $10.00 to $11.00; 10% earned $11.00 to $12.00; 13% earned $12.00 to $14.00; 11% earned $14.00 and over.

Mine E—1.12% of the contract miners earned $8.00 or less; 5.59% earned $8.00 to $9.00; 24.02% earned $9.00 to $10.00; 27.93% earned $10.00 to $11.00; 21.23% earned $11.00 to $12.00; 13.96% earned $12.00 to $13.00; 5.03% earned $13.00 to $14.00; 1.12% earned $14.00 to $15.00.

Mine F—5% of the contract miners earned $6.00 or less; 30% earned $6.00 to $7.00; 45% earned $7.00 to $8.00; 10% earned $8.00 to $9.00; 7% earned $9.00 to $10.00; 3% earned $10.00 to $11.00.

Mine G—51% of the contract miners earned $7.50; 23.5% earned from $7.50 to $8.50; 20.3% earned from $8.50 to $9.50; 2.2% earned from $9.50 to $10.50; 3% earned from $10.50 to $11.50.

Mine H—3% of the contract miners earned $7.91; 10% earned from $7.91 to $9.50; 15% earned from $9.50 to $11.00; 55% earned from $11.00 to $12.69; 10% earned from $12.69 to $15.00; 5% earned from $15.00 to $17.50; 2% earned from $17.50 to $21.46.

Mine I—11% of the contract miners earned $7.50; 30% earned from $7.50 to $8.50; 17% earned from $8.50 to $9.50; 14% earned from $9.50 to $10.50; 18% earned from $10.50 to $11.50;

6% earned from $11.50 to $12.50; 1% earned from $12.50 to $13.50; 2% earned from $13.50 to $14.50; 1% earned from $14.50 to $15.50.

Mine J—20% of the contract miners earned $6.00 per shift; 19% earned $6.00 to $7.00; 19% earned $7.00 to $8.00; 12% earned $8.00 to $9.00; 16% earned $9.00 to $10.00; 7% earned $10.00 to $11.00; 4% earned $11.00 to $12.00; 2% earned $12.00 to $13.00; 1% earned $13.00 to $14.00.

Mine K—8% of the contract miners earned $6.00; 10% earned $6.00 to $6.50; 10% earned from $6.50 to $7.25; 15% earned from $7.25 to $8.00; 15% earned from $8.00 to $8.50; 10% earned $8.50 to $9.00; 10% earned $9.00 to $10.50; 7% earned $10.50 to $11.00; 5% earned $11.00 to $12.00; 10% earned $12.00 to $13.00.

Mine L—.005% of the contract miners earned $5.00; .007% earned from $5.00 to $5.50; .008% earned from $5.50 to $6.00; .010% earned from $6.00 to $6.50; .035% earned from $6.50 to $7.00; .070% earned from $7.00 to $7.50; .073% earned from $7.50 to $8.00; .084% earned from $8.00 to $8.50; .120% earned from $8.50 to $9.00; .104% earned from $9.00 to $9.50; .109% earned from $9.50 to $10.00; .082% earned from $10.00 to $10.50; .072% earned from $10.50 to $11.00; .060% earned from $11.00 to $11.50; .052% earned from $11.50 to $12.00; .025% earned from $12.00 to $12.50; .018% earned from $12.50 to $13.00; .013% earned from $13.00 to $13.50; .016% earned from $13.50 to $14.00; .012% earned from $14.00 to $14.50; .008% earned from $14.50 to $15.00; .008% earned from $15.00 to $15.50; .006% earned from $15.50 to $16.00; .003% earned from $16.00 to $16.50.

Mine M—5% of the contract miners earned $8.00; 45% earned from $8.00 to $10.00; 35% earned from $10.00 to $12.00; 5% earned from $12.00 to $14.00; 5% earned from $14.00 to $16.00; 2% earned from $16.00 to $17.00; 2% earned from $17.00 to $18.00; 1% earned from $18.00 to $20.00.

Mine N—2% of the contract miners earned $6.00; 6% earned from $6.00 to $7.00; 8% earned from $7.00 to $8.00; 9% earned from $8.00 to $9.00; 27% earned from $9.00 to $10.00; 25% earned from $10.00 to $11.00; 7% earned from $11.00 to $12.00; 10% earned from $12.00 to $13.00; 2% earned from $13.00 to $17.00; 2% earned from $17.00 to $19.00; 2% earned from $19.00 to $20.00.

Mine O—10% of contract miners earned $4.00; 20% earned from $4.00 to $5.00; 30% earned from $5.00 to $6.00; 30% earned from $6.00 to $7.00; 5% earned from $7.00 to $8.00; 5% earned from $8.00 to $9.00.

Mine P—1.2% of the contract miners earned $6.00 to $7.00 per shift; 1.2% earned $7.00 to $8.00; 3.6% earned $8.00 to $9.00; 7% earned $9.00 to $10.00; 9.7% earned $10.00 to $11.00; 11.1% earned $11.00 to $12.00; 8.1% earned $12.00 to $13.00; 10.4% earned $13.00 to $14.00; 7.2% earned $14.00 to $15.00;

6.4% earned $15.00 to $16.00; 4.2% earned $16.00 to $17.00; 3.6% earned $17.00 to $18.00; 4.9% earned $18.00 to $19.00; 3% earned $19.00 to $20.00; 2.6% earned $20.00 to $21.00; 1.9% earned $21.00 to $22.00; 2% earned $22.00 to $23.00; .2% earned $23.00 to $24.00; 3.7% earned $24.00 to $25.00; 2.2% earned $25.00 to $26.00; 2.6% earned $26.00 to $27.00; 1.1% earned $27.00 to $28.00; .8% earned $28.00 to $29.00; .2% earned $29.00 to $30.00; .6% earned $30.00 to $33.00; .3% earned $33.00 to $34.00; .1% earned $34.00 to $36.00; .1% earned $36.00 to $37.00.

Mine Q—3.7% of the contract miners earned $7.50 to $8.50 per shift; 5.25% earned $8.50 to $9.50; 9.15% earned $9.50 to $10.50; 14.26% earned $10.50 to $11.50; 14.83% earned $11.50 to $12.50; 14.57% earned $12.50 to $13.50; 15.09% earned $13.50 to $14.50; 10.50% earned $14.50 to $15.50; 5.37% earned $15.50 to $16.50; 3.17% earned $16.50 to $17.50; 2.54% earned $17.50 to $18.50; .44% earned $18.50 to $19.50; .23% earned $19.50 to $20.50; .14% earned $20.50 to $21.50; .53% earned $21.50 to $22.50; .09% earned $22.50 to $23.50; .11% earned $23.50 to $25.50; .01% earned $25.50 to $27.50; .01% earned $27.50 to $28.50; .01% earned $28.50 to $40.50.

Mine R—11.2% of the contract miners earned $6.00 to $7.00 per shift; 12% earned $7.00 to $9.00; 23.5% earned $9.00 to $10.00; 17.9% earned $10.00 to $11.00; 29.40% earned $11.00 to $12.00; 6% earned $12.00 to $14.00.

Mine S—5.1% of the contract miners earned $5.00 and under; 18.1% earned $5.00 to $6.00; 23% earned $6.00 to $7.00; 20.2% earned $7.00 to $8.00; 17.3% earned $8.00 to $9.00; 10.1% earned $9.00 to $10.00; 3.6% earned $10.00 to $11.00; 1% earned $11.00 to $12.00; .8% earned $12.00 to $13.00; .3% earned $13.00 to $14.00; .5% earned $14.00 to $15.00.

Mine T—5.2% of the contract miners earned $4.00 to $5.00 per shift; 3.9% earned $5.00 to $6.00; 17.9% earned $6.00 to $7.00; 37.8% earned $7.00 to $8.00; 15.6% earned $8.00 to $9.00; 4.9% earned $9.00 to $10.00; 5.6% earned $10.00 to $11.00; 2.9% earned $11.00 to $12.00; 3.2% earned $12.00 to $13.00; 1% earned $13.00 to $14.00; 2% earned $14.00 to $15.00.

Mine U—40% of the contract miners earned $4.00 to $5.00 per shift; 40% earned $5.00 to $6.00; 20% earned $6.00 to $7.00.

Mine V—1.01% of the contract miners earned $3.00 to $4.00 per shift; 1.90% earned $4.00 to $5.00; 5.50% earned $5.00 to $6.00; 9.43% earned $6.00 to $7.00; 20.99% earned $7.00 to $8.00; 17.62% earned $8.00 to $9.00; 18.07% earned $9.00 to $10.00; 11.34% earned $10.00 to $11.00; 5.84% earned $11.00 to $12.00; 4.94% earned $12.00 to $13.00; 2.47% earned $13.00 to $14.00; .67% earned $14.00 to $15.00; .11% earned $15.00 to $16.00; .11% earned $16.00 to $17.00.

51. Average Earnings of Mine Workers Per Shift

Complete and accurate information under this heading for the years 1923 and 1924 has been obtained from the Workmen's Compensation Board; because both the total payroll and the num-

ber of shifts are used as the basis of assessments made by the Board, the former for the percentage levy and the latter for medical aid. The returns by companies are, therefore, audited by the Board. In what follows, the payroll is the gross payroll, including the officers of the company and the full earnings of the men, including the amounts above $2,000.00 per annum which are later deducted before making the levy. The number of shifts, likewise, included the days worked by the managerial and office staff. The inclusion of officials, however, will not have a very marked effect on the resulting average earnings. The pay of such officials, with the exception, perhaps, of a few at the top is not greatly different from the earnings of some individual miners and the few high salaries are offset by clerical salaries and would not materially raise the general average. The statement furnished by the Compensation Board has been reassembled, under each character of coal, by mining divisions and coal areas, with the following result:

TABLE 106—*Average earnings of all mine employees per shift as reported by the Workmen's Compensation Board.*

1923

No.	Division	Coal Area		Gross Payroll	No. of Shifts	Average Earnings Per Shift
			BITUMINOUS MINES—			
1	Crowsnest	K. 10	Crowsnest	$4,353,207.51	478,812	$9.09
2	Canmore	K. 7	Cascade	730,232.79	88,423	8.25
3	Brazeau		Nordegg	1,421,665.02	168,806	8.42
4	Mountain Park		Mountain Park	1,761,006.64	196,930	8.94
			Brule	1,117,175.57	137,225	8.14
	Total Bituminous Mines			$9,383,287.53	1,070,196	$8.77
			SUB-BITUMINOUS MINES—			
1	Crowsnest	B. 7	Pincher	$ 8,501.49	1,215	$6.99
3	Brazeau	B. 4	Saunders	261,464.03	35,215	7.42
4	Mountain Park	B. 3	Coalspur	661,410.23	87,211	7.73
	Total Sub-bituminous Mines			$ 931,375.75	123,641	$7.53
			LIGNITE MINES—			
5	Lethbridge	B. 9	Lethbridge	$2,351,965.09	300,876	$7.81
		B. 12	Taber	68,070.37	11,086	6.14
6	Medicine Hat	B. 13	Redcliff	47,815.75	8,773	5.45
7	Brooks	B. 14	Brooks	15,487.70	2,316	6.68
8	Drumheller	E. 8	Carbon	138,789.44	24,582	5.65
		E. 7	Big Valley	87,854.59	12,619	6.96
		E. 9	Sheerness	23,310.56	4,535	5.14
		E. 10	Drumheller	3,372,652.74	346,988	9.72
9	Ardley	E. 5	Castor	9,513.64	2,157	4.41
10	Pembina	E. 1	Pembina	337,553.03	56,672	5.96
11	Edmonton	E. 2	Edmonton	940,689.75	164,819	5.71
12	Tofield	E. 3	Tofield	106,071.01	19,644	5.40
		E. 4	Camrose	103,475.51	20,993	4.93
	Total Lignite Mines			$7,603,249.18	976,060	$7.79

SUMMARY, 1923.

Bituminous Mines	$9,383,287.53	1,070,196	$8.77
Sub-bituminous Mines	931,375.75	123,641	7.53
Lignite Mines	7,603,249.18	976,060	7.79
Total, All Mines	$17,917,912.46	2,169,897	$8.26

1924

BITUMINOUS MINES—

No.	Division	Coal Area		Gross Payroll	No. of Shifts	Average Earnings Per Shift
1	Crowsnest	K. 10	Crowsnest	$2,512,159.31	295,601	$8.49
2	Canmore	K. 7	Cascade	411,224.53	52,260	7.86
3	Brazeau		Nordegg	551,356.63	66,539	8.28
4	Mountain Park		Mountain Park	856,173.70	94,745	9.07
			Brule	144,195.37	20,349	7.08
	Total Bituminous Mines			$4,475,109.54	529,494	$8.45

SUB-BITUMINOUS MINES—

1	Crowsnest	B. 7	Pincher	$ 13,730.18	2,688	$5.15
3	Brazeau	B. 4	Saunders	255,358.96	33,317	7.66
4	Mountain Park	B. 3	Coalspur	887,817.75	114,136	7.77
	Total Sub-bituminous Mines			$1,156,906.89	150,141	$7.71

LIGNITE MINES—

5	Lethbridge	B. 9	Lethbridge	$1,453,087.23	200,939	$7.22
		B. 12	Taber	299,006.60	52,578	5.68
6	Medicine Hat	B. 13	Redcliff	107,641.29	22,012	4.89
7	Brooks	B. 14	Brooks	13,068.40	2,023	6.45
8	Drumheller	E. 8	Carbon	218,091.26	37,602	5.80
		E. 7	Big Valley	95,052.32	11,496	8.26
		E. 9	Sheerness	31,828.64	5,397	5.89
		E. 10	Drumheller	2,392,569.31	294,817	8.12
9	Ardley	E. 5	Castor	10,402.23	2,839	3.66
10	Pembina	E. 1	Pembina	333,596.31	48,832	6.83
11	Edmonton	E. 2	Edmonton	1,113,314.74	216,078	5.15
12	Tofield	E. 3	Tofield	110,561.80	22,201	4.98
		E. 4	Camrose	115,685.86	22,478	5.15
	Total Lignite Mines			$6,293,905.99	939,292	$6.70

SUMMARY, 1924

Bituminous Mines	$4,475,109.54	529,494	$8.45
Sub-bituminous Mines	1,156,906.89	150,141	7.71
Lignite Mines	6,293,905.99	939,292	6.70
Total All Mines	$11,925,922.42	1,618,927	$7.37

52. Annual Earnings of Mine Workers

All of the above information, as to wages and earnings per shift, still leaves unanswered the main question of the annual earnings of those engaged in the industry. Unfortunately, for the most part, the unions made no attempt to reply to this part of their questionnaire. One union, at a sub-bituminous mine, stated that the average yearly earnings for 1921 were $900.00; for 1922, $700.00, and for 1923, $400.00. Another union, at a sub-bituminous mine, gave an average of $700.00. The most complete reply was received from a union in a lignite field, which gave the following annual earnings as based on a survey of 230 workmen:

Year	Datal Men	Contract Men
1921	$823.50	$943.27
1922	711.56	784.34
1923	792.75	967.82

Another union, in a lignite field, gave the average earnings of mine workers of every class for 1921, 1922 and 1923 as from $700.00 to $900.00 per year. Still another union, at a lignite mine, gave the following as the average earnings for the three years 1921, 1922 and 1923:

Machine miners	$1,050.00
Pick miners	900.00
Underground laborers	800.00
Surface laborers	725.00

Except in the case of the one union, which states that it made a survey of 230 of its members, the above figures must be regarded rather in the light of estimates made by those who submitted them.

The income tax returns, showing the earnings of each employee for the four years in question and showing also the number of months for which that employee appeared on the payroll, have furnished the Commission with a mass of information on the subject. The first step was to exclude from these returns all of the administration staff and office staff. The operators were requested to furnish the names of all such; and the earnings of these individuals were left out of the tabulations. The next step was to segregate the different lengths of service within the year. The results were then compiled in a series of statements, which appear as Appendix XII to this Report. The information furnished by the sub-bituminous operators was so incomplete that those mines must be omitted. These statements give, for each of the years 1921 to 1924 inclusive, separated into bituminous and lignite mines and by half months from half a month up to twelve months, the number of employees, total earnings, the average earnings per employee, the average earnings per employee per month, the average lowest earnings and the average highest earnings. It was also possible to show, for each year and each character of coal, the average number of months worked at any one mine by the individuals, who appeared on the payroll of that mine. The average lowest earnings were obtained by taking the lowest earnings, for the respective periods, at each mine and

taking the average of these; and, similarly, with the average highest earnings. Finally, the total earnings, divided by the total number of employees, gives the figure of average earnings, regardless of the period worked; that is, the latter figure includes those who worked even half a month at any one mine. It is obvious that this general average figure is not a satisfactory statement of the average earnings of mine workers, for the very simple reason that the same individual may have appeared in the payroll of more than one mine. Indeed, this is a very common practice and, as the Commission points out elsewhere in this Report, should be encouraged and greatly developed. It would have been impossible to detect with certainty duplication of names in the long lists of employees furnished by the mines; so the possibility of such duplication and the resulting effect on average earnings must be kept in mind in connection with these figures.

An examination of the statements given in Appendix XII will disclose the following facts: For the bituminous mines, in the year 1921, more than half of the employees appeared on the payrolls for periods ranging from ten months to twelve months; and their average earnings ranged, correspondingly, from $1,582.25 up to an average of $2,102.97. In this particular case, well over one-third of the employees appeared on the payrolls for the whole twelve months and earned the average of $2,102.97. The rest of the employees, who appeared on the payrolls for from half a month up to 9½ months, had average earnings ranging from $53.07 up to $1,515.67. The grand average earnings of all the employees, irrespective of the period worked, were $1,384.36. For the bituminous mines, in the year 1922, about half the employees appeared on the payrolls for periods ranging from six months to twelve months; and their average earnings ranged from $1,062.03 to $2,611.93. In this case, the largest group appeared on the payrolls for seven months, with average earnings of $1,273.75. The other half of the employees appeared on the payrolls for periods ranging from one-half a month to 5½ months, with corresponding earnings of from $57.48 to $1,059.25. The grand average earnings of all employees for the year, irrespective of the period worked, were $976.98 For the bituminous mines, in the year 1923, half the employees appeared on the payrolls for periods ranging from 9½ months to 12 months; and their earnings ranged from $1,471.19 to $2,115.42. As in 1922, the largest group appears on the payrolls for the whole twelve months. This group, including nearly one-third of the total, have thus earnings at the highest average of $2,115.42. The other half of the employees appeared on the payrolls for periods ranging from half a month to 9 months; and their average earnings ranged from $1.10 to $1,483.64. The grand average earnings for all the employees were $1,453.88.

In the bituminous mines, for the year 1924, half of the employees appeared on the payrolls for periods ranging from five to twelve months, with earnings ranging from $884.24 to $2,660.17. In this case, the largest single group appeared on the payrolls for five months, earning the lower average of the above,

namely, $884.24. The next largest group appeared on the payrolls for six months, earning an average of $964.87. The other half of the employees appeared on the payrolls for periods ranging from half a month to four and a half months, with earnings ranging from $69.27 to $827.29. The grand average earnings of all the employees were $849.93.

For the lignite mines, in the year 1921, half the employees appeared on the payrolls for periods ranging from eight months to twelve months, with average earnings ranging from $1,108.53 to $2,045.07. The largest single group, over one quarter of the total, appeared on the payrolls for twelve months and earned the maximum average of $2,045.07. The other half of the employees appeared on the payrolls for periods ranging from half a month to 7½ months, with earnings ranging from $52.52 to $1,059.96. The grand average earnings of all employees were $1,175.02. For the lignite mines, in the year 1922, half the employees appeared on the payrolls for periods ranging from five months to twelve months, with average earnings ranging from $828.71 to $1,909.09. The other half of the employees appeared on the payrolls for periods ranging from ½ a month to 4½ months, with average earnings ranging from $49.29 to $872.12. The largest single group, about one-seventh of the total, appeared on the payrolls for four months, with average earnings of $740.11. The grand average earnings were $905.21. For the lignite mines, in the year 1923, half the employees appeared on the payrolls for periods ranging from eight months to twelve months, with earnings ranging from $1.115.00 to $1,736.14. The largest single group, nearly one-third of the total, appeared on the payrolls for twelve months and earned the maximum average of $1,736.14. The other half of the employees appeared on the payrolls for periods ranging from half a month to seven and a half months, with average earnings ranging from $22.44 to $1,215.43. The grand average earnings of all employees were $1,088.81. In the lignite mines for the year 1924, half the employees appeared on the payrolls for periods ranging from five months to twelve months, with average earnings ranging from $720.22 to $1,595.62. The largest single group, about one-seventh of the total, appeared on the payrolls for five months and earned the minimum average of $720.22. The other half of the employees appeared on the payrolls for periods ranging from half a month to four and a half months, with average earnings ranging from $52.28 to $646.88. The grand average earnings of all employees were $735.72.

Subject to the possibility of duplication already referred to, the tabulation in Appendix XII indicates for each year the number of employees included in it. Unfortunately, there is no accurate record of the total number engaged in the industry. The Mines Report gives figures for those on the payroll at the 31st December in each year (see Table 88).

Both the Mines Report and the Report of the Workmen's Compensation Board give figures, which they call the average number employed, but an examination of the origin of these figures shows that they cannot be used as an actual average for the purpose of

dividing into the total payroll and arriving at average earnings. The return of the Workmen's Compensation Board asks the employers to state "the usual number of men employed each month." This question is asked only for the purpose of placing the employer in a certain category for the purposes of the Act. The figure in the Mines Report is based on a monthly return of the number of employees "ordinarily employed in or about the mine." The monthly returns are then added together and divided by twelve to give the average figure. It will thus be seen that these returns depend on the construction placed by the individual employer on the expression "ordinarily" or "usually" employed. A true average figure, such as could safely be used in a calculation of average earnings, could only be arrived at by knowing the number employed each day, adding these numbers together and dividing by the number of working days. It will be well, however, to show the various figures for the number of persons employed in the coal mining industry, as given in the reports, compared with the number of individuals whose incomes are tabulated in Appendix XII (subject to duplications in the latter item).

TABLE 107—*Numbers employed according to the reports indicated compared with numbers in Appendix XII.*

	Mines Report			
Year	Average	At 31st December	Workmen's Compensation Board Reports	Number of Workmen Whose Earnings Are Analyzed
1921.....	10,010	12,236	8,685	7,414
1922.....	8,547	12,236	8,685	7,110
1923.....	9,927	11,477	10,758	7,533
1924.....	7,317	12,061	7,095	5,979

It will be seen that there is a very great discrepancy between the average figure in the Mine Reports and the figure in the Workmen's Compensation Board Reports, which is likewise an average, each being arrived at in the way above described.

The above table gives the number of workmen whose earnings are analyzed, as compared with the numbers employed according to the various reports. On the basis of output in the year 1923, the bituminous mines, the payrolls of which were summarized, produced 83.7% of the total bituminous coal; and the lignite mines 58.1% of the total lignite coal. Taken together, the mines, the payrolls of which were examined, produced 71.1% of the total bituminous and lignite coal.

H—COST OF LIVING

Both operators and unions were asked to reply to a number of questions on this subject and evidence was secured in the course of the sessions and otherwise. Probably very few people keep accounts so as to know precisely what it does cost them to live and why.

53. House Rents

A tabulation of the replies from mine workers' unions gives the following as to rents payable in certain of the mining camps of the province.

TABLE 108—*House Rents Reported by Mine Workers' Unions.*

Division	Report of Miners' Union at	Rent per Room Per Month
1	Bellevue	$3.50
	Hillcrest	4.00
	Blairmore	4.00-$6.00
2	Canmore	1.50- 2.00
3	Saunders West	5.00
4	Brule	2.50
	Cadomin	3.00- 3.50
	Foothills	1.50
5	Lethbridge	5.00
	Coalhurst	2.50
8	Rosedeer	2.50- 3.00
	Jewel	5.00
	Atlas	5.35
	Big Valley	3.25
11	Edmonton Local, 4119	4.00

The report as to rents made by the coal operators is given below, divided, in some instances, into Company houses and other houses. The returns given are per month and not per room per month as in the case of the replies by the unions. They are not, therefore, directly comparable.

TABLE 109—*House Rents Reported by Operators.*

Division	Coal Mining Co.	Rents of Company Houses Per Month	Rents of Other Houses Per Month
1	Hillcrest Collieries, Ltd... (Average)	$7.50	$10.00—$15.00
	West Canadian Co., Ltd. (Bellevue)	7.00--$12.00	16.00— 45.00
	West Canadian Co., Ltd. (Greenhill)	26.25	
	International Coal & Coke Co.	10.00	10.00— 30.00
	McGillivray Creek Coal & Coke Co.	8.00	12.00— 25.00
2	Canmore Coal Co., Ltd.	5.00— 16.00	
3	Brazeau Collieries, Ltd.	10.00	
	Alexo Coal Co.	2.50— 10.00	
4	Mountain Park Collieries, Ltd.	9.00— 11.00	
	Blue Diamond Coal Co., Ltd.	5.00— 10.00	
	Cadomin Coal Co., Ltd.	5.00— 12.00	
	Balkan Coal Co., Ltd.	5.00— 7.50	
	Sabotin, I. & Co.	6.00	
	Vitaly Co., Ltd.	6.00	
	Luscar Collieries, Ltd. (owned partly by workmen)	3.34	
5	Galt Mines	10.00— 15.00	
	Donaldson, C. S., Coal Co.	12.00— 25.00	
	Bay Coal Co., Ltd.	10.00— 25.00	
	Co-Operative Coal Co.	4.00— 5.00	15.00— 25.00
	North American Collieries, Ltd. (Coalhurst)	10.00— 12.00	15.00— 25.00
	Lethbridge City Mine		15.00— 19.00
	Lethbridge Coal Co., Ltd.	7.50	
	Chinook Coal Co., Ltd.	7.00— 10.00	4.00— 7.00

Division	Coal Mining Co.	Rents of Company Houses Per Month	Rents of Other Houses Per Month
6	Ajax Coal Co.		2.00— 10.00
	Redcliff Brick & Coal Co., Ltd.		3.00— 10.00
8	Rosedale Coal Co., Ltd.	7.00— 8.00	
	Rose-Deer Coal Co., Ltd.	5.00— 10.00	
	Ellis Coal Co., Ltd.	5.00— 15.00	
	Anderson, W. J. (Sheerness)	5.00— 10.00	
	Western Commercial Co., Ltd.	2.00— 15.00	
	Jewel Collieries, Ltd.	5.00— 8.00	
	Western Gem Coal Co., Ltd.	4.00— 10.00	
	Atlas Coal Co., Ltd.		10.00— 30.00
	Caledonian Collieries, Ltd.	1.50— 15.00	
	Rosemont Coal Co., Ltd.	10.00	
	Ideal Coal Co., Ltd.	4.00— 10.00	
	Hy-Grade Coal Co., of Drumheller	10.00— 35.00	
	New Walker Mine (J. Warneboldt)	2.00— 5.00	
	Midland Collieries, Ltd.	10.00— 15.00	
	Stahl & Wurz	free	
9	J. B. Remillard	5.00	5.00
10	Lakeside Coals, Ltd.	4.00	
11	Great West Coal Co.	7.00	
	Marcus Coal Mines, Ltd.	10.00	
10	North American Collieries, Ltd. (Evansburg)	5.00— 10.00	
12	Canadian Dinant Co., Ltd.	6.00— 10.00	6.00— 8.00

54. Room and Board

The questionnaires to operators and unions also asked for information as to the rates charged for room and board in that particular locality. The following is a tabulation of the replies received:

TABLE 110—*Room and Board, as Reported by Mine Workers' Unions.*

Division		Per Month
1	Bellevue	$45.00—$55.00
	Hillcrest	44.00
	Blairmore	45.00— 60.00
2	Canmore	55.00— 60.00
3	Saunders West	35.00— 40.00
4	Brule	48.50
	Luscar	45.00— 50.00
	Cadomin	50.00— 65.00
	Foothills	37.50
	Lethbridge	40.00
	Coalhurst	44.00
8	Rose-Deer	45.00
	Jewel	48.00
	Atlas	42.00
Edmonton & District Miners' Federation—		
11	Big Valley	40.00
	Edmonton Local 4119	32.00— 40.00

TABLE 111—*Room and Board, as Reported by Operating Companies.*

Division		Per Month
1	Hillcrest Collieries, Ltd.	$44.00
	International C. & C. Co.	45.00
	McGillivray Creek C. & C.	45.00—$60.00
3	Brazeau	39.00
	Bighorn & Saunders Creek	40.00— 45.00
	Alexo Coal Co.	38.00
4	Mountain Park	40.00— 50.00
	Blue Diamond Coal Co.	50.00
	Cadomin Coal Co., Ltd.	50.00— 65.00
	Balkan Coal Co., Ltd.	40.00
	Vitaly Co., Ltd.	40.50— 45.00
	Luscar Collieries, Ltd.	45.00
	I. Sabotin & Co.	40.50
5	Donaldson, C. S. Coal Co.	30.00— 45.00
	Bay Coal Co., Ltd.	42.00— 47.00
	Co-Operative Coal Co.	25.00— 35.00
	North American Colls., Ltd. (Coalhurst)	48.00
	Chinook Coal Co., Ltd.	37.00— 45.00
	Lethbridge Coal Co., Ltd.	36.00
6	Ajax Coal Co.	30.00— 40.00
	Redcliff Brick & Coal Co., Ltd.	28.00— 32.00
8	Peerless Carbon Collieries, Ltd.	36.00— 40.00
	Rose-Deer Coal Co., Ltd.	45.00
	Midland Collieries, Ltd.	32.00
	Ellis Coal Co., Ltd.	40.00— 50.00
	W. J. Anderson (Sheerness)	34.00
	Western Commercial Co., Ltd.	36.00— 40.00
	Jewel Collieries, Ltd.	36.00— 45.00
	Western Gem Coal Co., Ltd.	37.50
	Caledonian Collieries, Ltd.	37.50
	Excelsior Collieries, Ltd.	37.50
	Rosemont Coal Co., Ltd.	42.00
	Hy-Grade Coal Co., of Drumheller	36.00— 40.00
	Ideal Coal Co., Ltd.	37.50
	Peerless Carbon Coal Mines, Ltd.	36.00— 40.00
	Stahl & Wurz	30.00
	New Walker Mine (J. Warneboldt)	28.00— 36.00
10	North American Collieries (Evansburg)	40.00— 50.00
	Lakeside Coals, Ltd.	35.00
11	Great West Coal Co., Ltd.	32.00
	Marcus Coal Mines, Ltd.	30.00
	Canadian Coal Co., Ltd.	30.00
	Sparrow & Kelly (Board)	10.50— 12.00
12	Spicer Coal Co., Ltd.	30.00
	Dobell Coal Co., Ltd.	25.00— 30.00
	Canadian Dinant Co., Ltd.	30.00— 33.00

Average, $38.22 per month.

55. Cost of Living Budgets

One of the questions in the union questionnaire was: "What do you estimate to be the cost of living for an average family of five persons in your mining centre or camp? Give in detail the living budget on which you base these estimates." In a number of instances, very careful answers were received to this question; for example, the president of one union explained that they chose a committee of men with families of four, five and six who went

very deeply into the matter and drew up the budget and estimate. In questioning this official on his estimates, however, he admitted that certain items were a little high but said that, if they were reduced, the difference could easily be spent on some of the other items. This explanation is made in advance of presenting these various budgets, not with the object of casting doubt on them in the aggregate, but to show the difficulty of making up any such estimates. There is room for infinite variety in the constituent items and the workman would always advance the above argument that if any one were proved to be excessive for the average workman others may just as well be deficient. The district officials of District 18 took an interest in the compiling of a budget to answer this question. The Secretary explained that they had committees appointed in each local union to investigate prices at the stores and an average was then struck from this information and a family budget compiled. This budget may be described as being made up of estimated quantities extended at ascertained prices and is as follows:

TABLE 112—*Mine Worker's Family Budget, compiled by District Office from prices and information supplied by various mining camps in District No.* 18, *United Mine Workers of America. Average prices used.*

FOOD BUDGET FOR ONE WEEK

Potatoes	½	bus.	@	$1.37	$0.68½
Bacon	½	lb.	@	.61	.30½
Pork and Beans	1	can	@	.25	.25
Table salt	½	bag	@	.17	.08½
Coffee	¼	lb.	@	.63	.16
Macaroni	1	lb.	@	.18	.18
Milk	6	cans	@	.24	1.44
Baking Powder	½	can	@	.34	.17
Butter	3	lbs.	@	.49½	1.48½
Meat	7	lbs.	@	.28½	1.99½
Lard	2	lbs.	@	.25½	.51
Fish can	1	can	@	.52½	.52½
Rice	2	lbs.	@	.12½	.25
Corn can	1	can			.23
Apples (evaporated)	1	lb.			.27½
Vinegar	1	pint			.16
Raspberries	1	can			.47½
Flour	10	lbs.			.48
Ham	½	lb.	@	.56	.28
Sugar	6	lbs.	@	.10	.60
Pepper	½	can	@	.15	.07½
Tea	½	lb.	@	.66	.33
Jam	1	lb.			.24
Rolled Oats	5	lbs.	@	.06	.30
Cheese	2	lbs.	@	.40	.80
Syrup	¼	can	@	.85	.21
Fish	2	lbs.	@	.29	.58
Eggs	3	doz.	@	.44	1.32
Bread	15	loaves	@	.12½	1.87½
Peas	1	can			.24
Tomatoes	1	can			.24
Prunes	1	lb.			.19
Strawberries	1	can			.47½
Total Food for one week					$17.42

CLOTHING

Men's

Suits	1½	$60.00
Overcoats	½	17.50
Trousers	1	7.33
Overalls	3	7.74
Underwear	4	17.60
Socks	6	5.82
Hats	1	5.50
Caps	1	2.25
Shirts	4	14.50
Sweater	1	6.00
Boots	4	31.60
Overshoes	1	4.62
Rubbers	1	1.55
Gloves	2	3.50
Total for 1 year		$185.51

Boy's

Suits	1	$ 9.17
Overcoat	1	17.50
Caps	2	2.10
Pants	2	6.00
Sweaters	2	8.00
Stockings	7	4.13
Shirts	3	4.95
Underwear	4	9.76
Boots	3	13.87
Overshoes	1	2.00
Rubbers	1	1.05
Gloves	2	2.00
Total for 1 year		$80.53

Women's

Suit	1	$30.00
Overcoat	½	10.50
Underwear	4	14.00
Stockings	6	5.85
Shirt, woollen	1	10.00
Waists	2	9.75

Women's (*Continued*)

House dress	2	7.00
Corsets	2	6.25
Gloves	2	4.50
Hats	2	16.00
Boots	2	18.00
Overshoes	1	3.50
Rubbers	1	1.37
Prints	10 yds.	3.25
Longcloth	10 "	5.75
Total for 1 year		$145.72

Girl's

Suit	1	$12.50
Dress, gingham	2	17.00
Overcoat	1	17.50
Hats	2	6.00
Sweater	1	4.75
Underwear	4	10.00
Stockings	7	5.74
Boots	3	15.00
Overshoes	1	3.00
Rubbers	1	1.30
Gloves	2	1.50
Total for 1 year		$94.29

Child's

Dress, wool	1	$ 5.00
Dress, gingham	3	4.50
Overcoat	1	6.00
Sweater	1	2.75
Caps	2	2.50
Underwear	4	7.00
Stockings	8	4.40
Boots	3	7.26
Overshoes	1	1.00
Rubbers	1	.90
Gloves	2	1.00
Total for 1 year		$42.31

SUNDRIES

Rent	$154.32
Light	21.84
Water and Sanitation	18.00
Insurance, fire, doctor and hospital	29.88
Household renewals and washing supplies	41.75
School tax	4.00
Trade Union	15.00
Newspapers and magazines sundry, one daily newspaper	15.00
Wash house	12.00
Tools, sharpening and replacement	24.00
Barbering	10.00
School supplies	5.00
Coal, 12 tons	50.52
	$401.31

RECAPITULATION

Clothing for one year	$548.36
Food for one year, $17.42 x 52	905.84
All other items	401.31
	$1,855.51

This budget prepared by the District Office was sent out in mimeographed form to the locals and many of them filed it as their answer to the question. Others, however, submitted their own budgets in more or less detail and showing greater or smaller variations from the standard.

TABLE 113—*Estimates of Cost of Living for Family of Five, as submitted by Mine Workers' Unions, who did not use official budget.*

	Amount
U.M.W. of A.—	
Local Union at	
Bellevue	$2,027.22
Hillcrest	1,863.92
Blairmore	1,863.92
Saunders West (Recommended $1,980.00)	$960.00 to 1,080.00
Brule (Recommended $2,232.28)	1,634.46
Cadomin (Recommended $1,813.80)	$1,500.00 to 1,800.00
Foothills	1,800.00
Lethbridge	1,800.00
Coalhurst	1,989.31
Atlas	1,973.54
Rose-Deer	1,868.04
Edmonton and District Miners' Federation—	
Local Union at	
Big Valley	1,589.85
Beverly	1,836.00

In addition to those listed one union filed an itemized budget totalling $3,591.00. In this budget the amounts for food, clothing, rent and sundries were about the same as the official District 18 budget but the additions included insurance premiums for accident, life, annuity and endowment policies totalling $560.00 a year, music lessons $500.00 a year, vacation and amusements $525.00 a year, etc.

The Department of Labor, Ottawa, publishes monthly in the Labor Gazette "the cost per week of a family budget of staple foods, fuel and lighting and rent in terms of the average prices in 60 cities in Canada." This budget is intended to show the changes in the cost of the items included and not to show the minimum cost for an average family. It is explained in the text that the items included in the budget would, on the average, be about two-thirds of the total cost of living for a family of five. For April, 1925, the average grand total of this Labor Gazette budget is $20.83 a week or $1,083.16 a year. The same items in the official U.M.W.A. budget amount to $1,132.52 but, when we come to examine the items, the similarity is seen not to be as great. Taking the weekly figures we have the following comparison:

TABLE 114—*Comparison of certain items of cost of living budget for a family of five per week.*

Item	Ottawa April, 1925	U.M.W.A. (Prepared about that time)
Food	$10.56	$17.42
Fuel and lighting	3.33	1.39
Rent	6.90	2.97
Ottawa sundry item	.04	
	$20.83	$21.78

It will thus be seen that, as against the general average, the U.M.W.A. budget saves on rent, fuel and light but calls for an increased expenditure on food. The average cost of staple foods by provinces, as given in the Labor Gazette, shows that Alberta appears occasionally above but generally below the average for the whole country. It must be borne in mind, however, that the Labor Gazette figures are for prices in cities and, therefore, may not apply equally to the various mining communities; but, from a comparison of the above figures, it would seem as though the food item of the U.M.W.A. budget required further investigation either as to quantities or prices.

The Labor Gazette says that the items listed should constitute about two-thirds of the total family expenditure. On this basis, the Ottawa estimates would work out to a yearly budget of $1,621.62, as against the yearly budget of $1,855.51, submitted by the U.M.W.A. As will be seen from the above tabulation, a number of the workers returned the actual cost of living as being below this budget figure. It was admitted in the evidence that a large number of men in the district did not earn anything like the amount indicated; but the contention was that they were, therefore, deprived of a number of vital necessities for the decent maintenance of a family. The reduction took place all around—in food, clothing, housing accommodation, etc. As will be seen by the compilation of earnings in the coal industry, a budget calling for $1,800.00 a year has not been within the reach of the majority. All of the above budgets, therefore, which call for more than this amount may be taken as indicating a standard, which they wish to attain or which they regard as a minimum rather than as an established fact of what the cost of living has been in the past.

An attempt was made to ascertain to what extent the other members of a mine worker's family assist in its support; but, apparently, the opportunities for such supplementary earnings are not very great or very widespread. The housing accommodation is not such that it is possible to take in roomers; and witnesses submitted that, at the prices charged for room and board in the various mining camps, this could not be looked on as a source of profit. In some cases other members of the family get positions; but it is generally by leaving home and this reduces the surplus available after such individual member provides for his or her own maintenance. Naturally, the expenses of single mine workmen are much less than those of the married men.

56. Cost of Living in Closed Camps

Several complaints were made to the Commission about the cost of living in closed camps, where the Company owned the store; and actual comparisons in detail were promised but were not forthcoming. There may have been times in the past when this was something of a factor but, with the present day prevalence of mail order buying and facilities for transportation by motor car and otherwise, the Commission has no reason to think that there is much to this complaint. For example, in one case where this matter was mentioned, the Secretary-Treasurer of the local union said that there were three privately-owned stores, which were just as near the majority of the work people as the Company's stores, and, he thought, the one Company store did as much business as the other three combined. This business was done with the neighboring farming community as well as with the mine workers so, in this case at least, it would seem as though the prices at the Company-owned store or the quality of the goods supplied must be such as to give it the business. In a number of Company-owned townsites, facilities have been provided for men to establish their own co-operative store. In other cases, a committee of the men has been given every facility to investigate the prices charged in comparison with prices in other similar communities. This seems the best method of settling a question of this kind.

I. LIVING AND HOUSING CONDITIONS

In approaching a study of the living and housing conditions among the mine workmen of Alberta, it is necessary to consider the standards to be applied. A country still relatively in the pioneering stage cannot be expected to show conditions comparable to older communities. As mining settlements are for the most part in outlying districts, they cannot be judged by the conveniences and amenities achieved by the towns and cities even in a new country. The general level reached must, therefore, be taken into consideration. One of the union officials put it very succinctly in his evidence when he said he felt bound to admit that the operators were drinking the same water as the men and had the same sanitary conditions to deal with. Only a very brief summary can be presented of this part of the Commission's inquiry which, pursued to its logical conclusion, would involve all the problems of civic government. It was approached by the method of the questionnaires to operators and unions. The replies cannot be set out in full detail in this report but the compilation of them (Appendix IV, not printed) should be examined by all interested in the details. Evidence on all these matters was brought forward at the various public hearings and will be found in the transcript (Appendix V, not printed). A report on each mining community was secured from the Department of Health of the province and is attached to this report as Appendix VII (not printed). In addition the Commission made a personal inspection of the living quarters at the various mines visited.

As might be expected, the conditions thus disclosed varied from fair to good in the case of the better established and older communities to very bad at some of the small, unprofitable mines; whose very existence as a business enterprise is highly precarious. On the average, the conditions found cannot be described as satisfactory and steps for their improvement should be taken by all who are directly or indirectly responsible. This includes the men themselves, the operators of the coal mines and the various Departments of the Government. The greatest help towards improvement, however, will come almost automatically with increased stability in the industry itself; because, no doubt, the desire for such improvement exists in the minds of all concerned. Due mainly to lack of security in his work, the employee has contented himself with the cheapest shelter and makeshift arrangements for water supply and sanitation. An operator, struggling to avoid bankruptcy, has postponed attention to matters which are only indirectly remunerative. The Government has been asked to show forbearance with pioneer conditions. But, in the opinion of this Commission, the improvement cannot be postponed until the improvement in the industry has become an accomplished fact; indeed the former will do much to help the latter. Discomfort for a man and his family constitutes a continual cause of unrest and discontent. Some measure of amelioration must be achieved, in certain places, to bring about contentment in the working force and that industrial peace which is the industry's greatest need.

57. General Summary of Conditions

Without attempting to enter into details, the following is a brief survey of the living and housing conditions throughout the various parts of the province.

In the Crow's Nest Pass District especially at a town like Blairmore the situation is fair to good. Even here, however, slums have been allowed to spring up in the various "Bush towns," "Slav towns," "Shack towns," as they are called, which reproduce the unsatisfactory features of the newest mining settlements. The better parts of these communities, however, show clearly that the miner is as anxious as any other class in the community to provide himself with proper home surroundings, given an opportunity to do so.

The special feature of the settlement at Canmore has been the jealousy and friction between the Company's townsite on one side of the river and the independent townsite on the other. As will be discussed later in connection with Company-owned townsites, the difficulties of financing the various utilities created a disparity between these two communities.

In the Lethbridge District, also, the living and housing conditions in most of the mining camps are found to be fair, especially in respect to housing; but there are complaints as to the water supply and sanitation.

In the Drumheller area, as might perhaps be expected from its age as a mining district and the highly seasonal nature of the

operation, are to be found some of the worst living and housing conditions within the province. The mines are scattered over a wide area and the physical features also militate against a proper centralization of housing, sanitation and water systems. In the town of Drumheller itself, a serious effort has been made to improve conditions and provide housing for the workmen but, in the outlying districts, the short periods of employment seem to have precluded the workmen from building themselves anything more than the barest shelters by way of houses. In his evidence, the Secretary-Treasurer of Atlas Local stated that a survey of the membership showed 28% living in one and two-roomed shacks of an average dimension of 13 ft. 6 ins. x 12 ft. 7 ins., containing sometimes seven persons and on the average three persons; 95% of the membership were dependent on the water cart system. The sanitary arrangements are very primitive and it was reported to the Commission that this community is especially prone to epidemics. To relieve the picture, mention should be made of the camp at Rosedale, which is maintained by the Company and provides good housing and sanitary conditions for its workmen.

Except when overcrowded with workmen, the mines at Nordegg furnish a good example of a Company-owned townsite. The Company there has 60 cottages with baths, water closets and water and sewer connections. The other cottages owned by the Company have water faucets located at convenient points outside and have proper sanitary arrangements. Complaint as to this camp had to do with times of peak production when these cottages proved inadequate and recourse has at times been had to tents.

The position at the main mines on the Alberta Coal Branch may also be described as fair to good, the best conditions being found where the Company controls the townsite and builds the houses. Improvements will be made with time to the water supply and sanitation in these places.

For a number of the mines around Edmonton, the workmen live either in the city or in the town of Beverly. The outlying mines partake of the general characteristics where, like all the small mines scattered throughout the province, conditions can only be described as fair to bad or very bad.

58. Housing Recommendations

The Commission considers the following as a minimum that should be insisted on, even at the present stage of the development of the mining industry of this province.

When a coal mining property is to be opened up, in places remote from a town or village, and where it is impossible for the employees to find housing accommodation in a community already established, it should be compulsory on the Company or persons opening the mine to provide adequate housing accommodation. In the early stages of development, this may take the form of bunk-houses. In many cases it is not possible, until the preliminary work is done, to decide just where the mine will be permanently opened up or what is a suitable and convenient place for a

townsite and the extent of the housing accommodation required. It would, therefore, be difficult to make housing regulations covering this stage of development and the accommodation must of necessity be somewhat primitive. When this stage has passed, however, buildings suitable for families should be provided and the use of bunk-houses be discontinued. It is perhaps a little difficult to set a hard and fast limit but, generally speaking, a period not exceeding two years might be allowed from the commencement of operations until proper housing accommodation is provided. During the time when bunk-houses are used, they should be under very strict inspection and regulation. Many complaints have reached the Commission on this ground and, whoever is directly concerned in the care of these buildings, the operator of the mine must be held ultimately responsible for their condition and the regulations which seem in themselves to be adequate should be more rigidly enforced by inspection.

This brings up the question of closed and open camps. There may be exceptions but, as a rule, the coal company is out of pocket or at best breaks even on building and maintaining dwellings or running a store and both are undertaken, in the first instance, from the necessity of providing for their workmen. By doing so, however, the Company adds the relationships of landlord and retail merchant to that of employer and draws on itself the accumulated grievances and friction resulting therefrom. The men feel that the ownership of the houses by the Company cramps their freedom of action. In addition to the Company-owned houses, therefore, these objections both sentimental and real to "closed camps" make it advisable that building lots on the townsite or on other land, set aside for this purpose, should be sold or leased to employees to build houses for themselves. However, on account of the difficulty of financing with the uncertainty as to employment, it cannot be made obligatory on the part of an employee to build a residence for himself and his family.

After the suggested two year period has passed, hotels or boarding houses should be provided for single men replacing the bunk-houses. The townsite, whether Company owned or privately owned or both, should be planned with a view to compactness, so as to permit of economy in the installation of water and light systems and other conveniences. There should be building regulations, preventing the building of shacks or poorly constructed houses and a plan of all buildings to be used as dwellings should be submitted to the proper authority for approval before the buildings are erected. No one should be allowed to put up dwelling houses on any other part of the property.

Perhaps mention should be made of a suggestion put before the Commission for a scheme of Government housing in coal mining camps, the workman moving to another camp to carry with him in some way the credit for what he had already paid in on a house. This plan is mentioned only to dismiss it as impractical and unnecessary. Apart from all other considerations, the Government could not be expected to do this for one class in the community unless prepared to do it for all others.

59. Water Supply Recommendations

Where practicable, a water system with pipes conveying water to each building should be provided. The installation of each such system is an engineering problem and the operating company can only be expected to make the necessary expenditure on its own property. The installation of a water system to privately owned property becomes a community problem, similar to that in any other town or village in the province, and can only be undertaken where the community is able to finance it. In a properly planned compact settlement, however, the extension to privately owned properties of a system installed by the Company for its own use will present the minimum of financing and other difficulties. Where a water system is impracticable and the supply is obtained from a water cart, each dwelling should be required to provide a suitable barrel or other container.

60. Sanitation Recommendations

Hotels and boarding houses should have water closets and septic tanks. All outside closets should be provided with boxes which can be removed and burned at frequent intervals. No earth closets should be allowed. A garbage can with tight lid should be supplied to each house and a regular system adopted for emptying same, with regulations requiring all garbage to be placed in these cans and a penalty for omission. In a closed camp, the Company should be responsible for water supply and sanitary conditions under the Government authority.

61. General Plan

In the opinion of the Commission, the necessary supervision of the laying out of a new townsite, the regulating of the buildings and the control over the various matters involved can best be secured by setting up each as a scheme under the Town Planning Act of the province. It is possible that that Act may require amendment in minor particulars but, on its broad lines, it affords just the machinery for the purpose. It also provides the method for improving conditions in existing localities. Under it, a wide area can be taken in and made to conform. It is specially designed to care for the problem of marginal settlements which otherwise prove a menace to a community. If such regulations are to be strictly enforced on new operations, it follows, as a matter of course, that the older communities must be made to conform, because these improvements will entail some expeditures which in fairness, all should be called upon to meet.

The Commission cannot too strongly express its views that the plea of pioneering conditions should now be disregarded. It is time that the minimum requirements of health, decency and comfort should be enforced on all without discrimination. If this be done, the relative positions will remain roughly as before. The aggregate effect on the cost of coal, which might conceivably be detrimental in competitive markets, will, in the opinion of the

Commission, be almost negligible in the first instance and will be more than offset by the contentment and stabilization that will be introduced into the ranks of the mine workmen and by the resulting general improvement in the labor relations throughout the industry.

The Commission recommends, therefore, that along some such broad general lines as laid down above a separate study be immediately undertaken by experts, in co-operation with all concerned, to fix upon and thereafter give effect to the much needed improvements in the living and housing conditions of mine workmen throughout the province.

J. EDUCATION

The Commission secured from the Department of Education a statement, as at the close of the year 1924, of the number of rooms and the enrolment of pupils at various schools which serve the mining population. This list is by no means complete and the figures for enrolment include in varying degrees others than the children of mine workers. It will be of interest to append the list:

TABLE 115—*Statement by the Department of Education of school facilities at some of the mining centres.*

Mining Division No. and Name	School District and No.	No. of Rooms	Enrolment for 1924
1. Crowsnest—			
	Blairmore 628	13	532
	Bellevue 1336	10	410
	Coleman 1216	15	692
	Hillcrest Mines 1916	8	318
	Lundbreck 1571	1	43
	Pincher Creek 121	8	270
2. Canmore—			
	Canmore 168	6	226
3. Brazeau—			
	Alexo		
	Harlech 3999	1	11
	West Saunders		
	Nordegg 3211	6	233
4. Mountain Park—			
	Brule 3537	4	159
	A. C. Branch		
	Balkan 3212	1	17
	Blackstone		
	Lovett		
	Coal Valley 1053	1	31
	Mercoal		
	Coalspur 3674	1	23
	Cadomin 3896	3	118
	Luscar 4184	2	54
	Mountain Park 3334	3	84

Mining Division No. and Name	School District and No.		Number of Rooms	Enrolment for 1924
5. Lethbridge—				
	Coalgate Commerce	2894	2	103
	Diamond City	1861	1	66
	Hardieville	4069	4	165
	Lethbridge	51	59	2523
	Magrath	620	12	484
	Raymond	700	15	566
	Boundary Creek	1838	1	16
	Cardston	457	13	673
	Comrey	2250	1	11
	Lucky Strike	2589	1	17
	Manyberries Con.	44	3	119
	Milk River Con.	28	4	149
	Elcan Barnwell Con.	15	4	97
	Taber	933	13	571
6. Medicine Hat—				
	Medicine Hat	76	66	2929
	Redcliff	2283	6	298
7. Brooks—				
	Bassano	2131	5	213
	Eyremore Bow	2107	1	19
	Champion Con.	40	5	190
	Carmangay	2087	3	100
	Long Coulee	1531	1	29
8. Drumheller—				
	Midlandvale Drumheller	2472	25	1198
	Nacmine	3771	2	60
	Aerial Rosedale Village	3751	4	144
	Wayne	3467	4	176
	Big Valley	2545	6	292
	Morrin	2513	2	81
	Rowley	2680	2	56
	Rumsey	2019	2	63
	Scollard Con.	76	2	48
	Three Hills Village	3048	4	174
	Twining Three Hills	1730	1	27
	Carbon	1218	3	136
	Craigmyle	2661	3	85
	Delia	3261	3	121
	Forcena	3884	1	17
	Garden Plain	2941	1	19
	Hanna	2912	8	456
	Sheerness	2214	1	36
	Huxley	1575	2	49
	Lousana Con.	38	3	100
	Trochu Valley	1742	4	144
9. Ardley—				
	Castor	2194	6	220
	Erskine	1493	3	104
	Gadsby Con.	21	3	117
	Halkirk	2162	3	92
	Nevis	1003	1	33
	Stettler	1475	11	437
	Alix Con.	12	4	128

Mining Division No. and Name	School District and No.		Number of Rooms	Enrolment for 1924
9. Ardley—*Continued.*	Ardley, Great Bend Con.	42	3	100
	Delburne Con.	37	3	107
	Donalda Con.	57	4	148
	Foreman	1466	1	22
	Forestburg Con.	45	5	198
	Galahad Con.	62	4	131
	Halcourt	2835	1	13
	Heisler	3710	2	70
	Kelsey	4173	1	25
10. Pembina—				
	Wabamun	2843	1	34
	Evansburg	2902	3	137
11. Edmonton—				
	Beverly	2292	6	384
	Clover Bar Village	4174	2	44
	Namao, Sturgeon	24	2	70
	Cardiff	2115	1	70
12. Tofield—				
	Camrose	1315	15	626
	Dinant	2448	1	40
	Roundhill Village	2234	2	80
	Tofield	1939	5	203
13. Peace River—				
	Halcourt	2835	1	13
	Sexsmith	3600	2	67

Numerous complaints of the inadequacy of the educational arrangements have reached the Commission, by way of the replies to the Union Questionnaire and through the evidence of witnesses at sessions. In some cases, it was found that the condition complained of had since been remedied but it is nevertheless a fact that, like everything else connected with the coal mining industry of Alberta, the irregularity of operation reflects itself in difficulties regarding education. Workmen and their families flock to the mining centres in the winter time and overcrowd the schools. Even the poll tax of $4.00 a head cannot be collected from those who are paying school taxes elsewhere. The taxpayers, therefore, of the school districts where these seasonal mines are situated have a heavy burden financial and otherwise thrust on them. Efforts are made to meet the situation by increasing the number of scholars to a room, letting some of the children come in the morning and some in the afternoon, etc.

The Dominion Government regulations for the leasing of coal lands include provisions that the lessee shall pay all school taxes on the lands and, further, that, if the mine operations create a centre of population, comprising persons of school age and a school district is thereupon created, the lessee shall provide a suitable site and erect and maintain, during the currency of the lease, a school house for the accommodation of all such persons. Many of the larger operators in the province, being the chief or only taxpayers, pay the salaries of the school teachers and the other expenses of the school, although the mine workers are sup-

posed to contribute. It is not in camps such as these that the chief difficulty as to education occurs but in the mines producing coal for the domestic trade, where the ordinary school facilities are over-taxed by the winter rush.

As in the general matter of living and housing conditions, improvement in educational facilities will be secured by anything that adds stability to the coal industry. Meantime the education of mine workers' children is part of the general problem of education in the province and must be treated as such.

K. STRIKES AND CONCILIATION

62. History of Strikes in Alberta

The Commission does not consider that it would serve any useful purpose to give anything like a complete account of the strikes that have, in the past, occurred in the coal mines of Alberta and only a brief general statement will be made. The major disturbances have been as follows:

In 1905 at Lethbridge over recognition of the union, a very bitter struggle lasting about 9 months.

In 1907 over the renewal of the agreement, lasting for a few weeks.

In 1909 over the renewal of the agreement, lasting 3 months.

In 1911 over the renewal of the agreement, lasting 8 months and, in some places, nine months.

In 1917 over the renewal of the agreement, lasting 3 months.

In 1919, called by the O. B. U., affecting all the larger mines in District 18, lasting 3 months.

In 1922, over the renewal of the agreement, lasting from April 1st to August 28th, or practically 5 months.

In 1924, over the renewal of the agreement, lasting from April 1st to end of October, or 7 months; the strike lasted to the end of October although the agreement was dated October 10th, 1924.

The agreement of March 31st, 1915, was negotiated without cessation of work and the readjustment at August 14th, 1916, was likewise not accompanied by any cessation of work, except at one or two mines for a few days. With the exception of these and some other adjustments that were made during Mr. Armstrong's regime, it will thus be seen that, on each occasion of the making of an agreement, there has been a more or less prolonged strike.

In addition to these major struggles, however pithead strikes have been extremely numerous. For example, it was stated in evidence that, for the period from March 31st, 1919, to March 31st, 1920, there were 58 pit-head strikes throughout District 18 and, for the ensuing year, from March 31st, 1920, to March 31st, 1921, there were 38 of these pit-head strikes.

It is usual, in giving statistics of strikes, to record the number of working days lost and even the loss in wages; for example,

the Labor Gazette states that the 1922 strike involved 7,538 employees (including south-eastern British Columbia) for a duration of 124 working days and with a time loss of 931,960 working days. Similarly, the 1924 strike was recorded by the Labor Gazette as involving 7,403 employees for a duration in working days of 169 and a time loss in working days of 1,224,159. The 58 pithead strikes above referred to are stated to have caused a total loss of 502,405 working days and a loss of $2,500,000 in wages. Under Alberta conditions, it is quite misleading to discuss strikes in terms of total loss of working days or total loss of wages; for the very simple reason that, for considerable portions of the time involved, the miners would not have been working, if there had been no strike. There is great loss connected with these strikes but, due to the normal irregularity of operation, the exact measure of that loss must be taken at something considerably less than the full period of days multiplied by the full number of employees involved. Another disturbing factor in such a calculation of absolute loss arises from the increased production in order to lay up stocks in anticipation of a strike, and the tendency to increased production after the strike, in order to replenish such stocks. This is particularly true of the mines supplying the railways; although, following the 1924 strike, owing to the price basis being still too high, the expected orders for replenishment did not materialize.

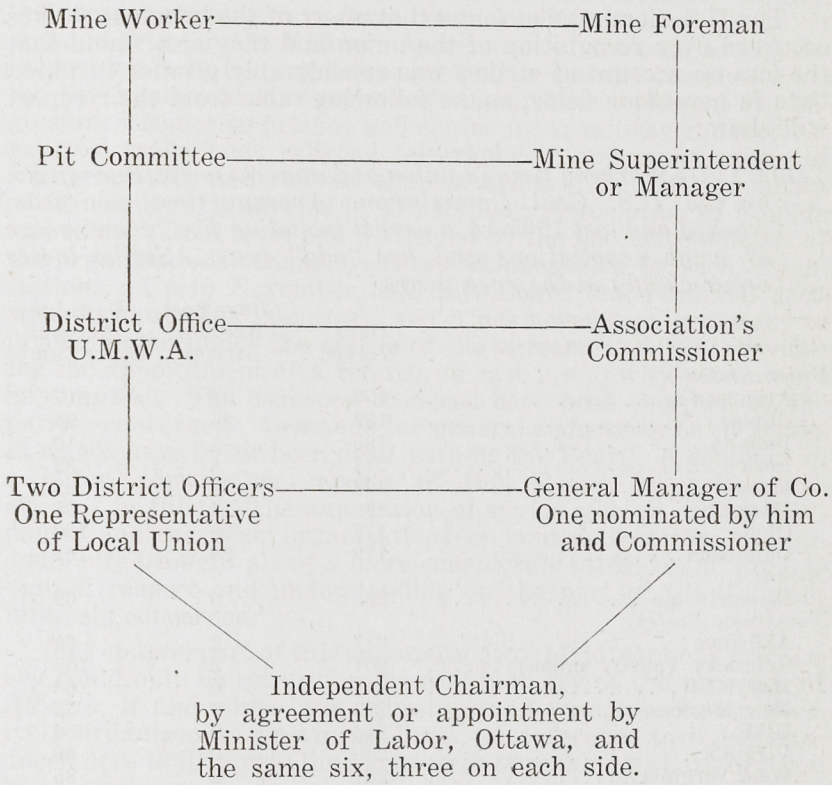
63. Pithead Strikes

To deal first with pit-head strikes; in theory, there should be none of such strikes and, in practice, there are a great many. Under the various agreements, there are no imaginable circumstances in which a pit-head strike is justified. The proper procedure is laid down as will be discussed in greater detail a little later. The question arises, therefore, why the machinery, thus devised by both parties at the time of the making of an agreement, fails to function as designed. The only answer is that feelings become heated to a point where judgment ceases to rule. This condition, again, may be ascribed to the friction of day to day relations already referred to which, if allowed to continue, culminates in an outburst. The pit-head strike is always against the publicly expressed policy of district headquarters and often continues in strict defiance of district orders.

The references already made in this chapter to sundry wage and working conditions will give an idea of the complexity of the relationship between operators and workmen within the industry; and, with this complexity, arise the opportunities of misunderstandings and petty grievances. A very fruitful cause of these local disputes lies in indefinite promises, which easily become to the workman's mind broken promises. It would be far better for the operator to take whatever time and trouble is necessary to settle, definitely in advance, the bargain for the particular work involved and to get to the bottom of the grievance and see whether it cannot be remedied. The machinery for adjusting grievances, as it existed under the old agreements between the

Western Canada Coal Operators' Association and the U.M.W. of A., District 18, may be seen at a glance from the following diagram:

TABLE 116—*Alberta machinery for adjusting disputes under old agreements Western Canada Coal Operators' Association and U.M.W.A., District* 18.



The above are the steps laid down by the agreement. In practice there was often an appeal by the Pit Committee to the General Manager before the matter was referred to the respective District Offices.

Under the new individual agreements, this machinery for the settlement of disputes has necessarily been somewhat modified, for the most part by omitting any reference beyond the Pit Committee and the General Manager. In some cases, however, an Appeal Committee is set up by bringing in an independent Chairman, to be selected by agreement or appointed by the Minister of Labor. The machinery, thus provided, seems adequate and all that remains is to establish the habit of having recourse to it. The Commissioner of the Operators' Association stated that, in a year, from 20 to 25 cases would get as far as his office, of which, perhaps, three or four, on an average, would require an independent Chairman.

In connection with such minor disputes, therefore, the Commission finds that the requirements are an earnest determination on both sides to use the existing machinery and an equally sincere effort to dispose of each dispute as it arises so that heated feelings have no time to develop.

64. Strikes for Recognition of the Union

The U.S. Commission found that many of the bitterest strikes occurred over recognition of the union and they also found that the loss on account of strikes was considerably greater in union than in non-union fields, as the following table from their report will show:

TABLE 117—*Working time in union and non-union states as given by the U.S. Coal Commission. Average time, per year, worked and lost* 1905-14, *a period including five "even" years of wage negotiations and five "odd" years. Strike losses occur chiefly in the even years.*

	Days Worked	Days Lost Account Strikes	Days Lost Account Other Causes
Union States—			
Arkansas	157	34	117
Illinois	189	25	94
Indiana	185	13	110
Iowa	211	8	89
Kansas	192	24	92
Missouri	186	24	98
Ohio	177	28	103
Oklahoma	179	28	101
Mixed:			
Pennsylvania	233	6	69
Non-Union States:			
Alabama	237	2	69
Kentucky (partly union)	201	2	105
Maryland	245	0	63
New Mexico	253	0	55
Utah	254	0	54
Virginia	240	0	68
West Virginia	221	2	85

In the foregoing brief history of strikes in Alberta, it will be seen that the nine months' strike in 1905 at Lethbridge was over recognition of the union. As recently as January, 1926, according to press reports, the officials of the Mine Workers of Canada proposed to call a similar strike at certain mines in Drumheller but failed to get the support of the membership.

65. Strikes Over Main Agreement

The brief history above shows that, in Alberta as elsewhere, the major disturbances occur at the time of the termination of an agreement and in the attempt to secure a new one. There is, at such times, an obvious and unavoidable conflict of desires. In considering suggestions to obviate serious disturbance or to minimize its effect, too great emphasis cannot be laid on the necessity of preventing accumulations of petty grievances, in the ways

already referred to. The rule should be never to allow a dispute to hang over. Both operators and mine workmen should strive for this. Most effective machinery for dealing with such matters is found in the Canadian Railway Board of Adjustment No. 1 which was created in 1918. This Board has been so successful that similar arrangements have recently been made to take in other classes of railway employees. The original agreement constituting Board of Adjustment No. 1 has been modified slightly, the present agreement in force being dated 15th April, 1921. It is made between the Railway Association of Canada, acting for the two main railway systems and 9 other railway companies, on the one hand, and six employees' organizations—locomotive engineers; locomotive firemen and engine men; railway conductors; railroad train men; railroad telegraphers; and maintenance of way employees and railway shop laborers. The Board consists of 12 members, 6 selected by the Railway Association of Canada and compensated by it and 6 selected by the executive officials of the organizations of employees and compensated by such organizations. Up to November last, this Board had rendered decisions in more than 262 cases; and it has never been necessary to invoke action under the article of the agreement which provides for the appointment of a referee, in case a majority vote cannot be obtained. The decisions rendered have been accepted by the parties concerned. Demands for general reductions or increases in wages have never been dealt with by the Board. A sentence in a letter, forwarding reports of this Board, is well worth quoting in full: "The association of senior officials of the Companies and the labor organizations in joint deliberation has undoubtedly brought about a more considerate attitude and greater mutual respect and understanding on the part of the different interests concerned."

The counterpart of this successful piece of adjustment machinery could only be set up for the coal industry of the province of Alberta, if and when both operators and workmen were effectively organized on provincial lines. A reference to it is introduced here to illustrate the importance of making a sharp division between the major wage negotiations and the adjustment of details in the day to day working out of the agreements.

It would be a great thing, then, if at the expiration of an agreement, there was nothing left to discuss but the question of wages. This is a matter which each man understands and on which he can make up his mind without difficulty. If other matters are interjected, a feeling may easily be engendered that there is a matter of union principle at stake, if, indeed, the issue be not further complicated with theories of political economy and the constitution of society.

The United States Coal Commission states that it regards the publicity of facts as very important and that its investigators found the bitterest feelings aroused by rumors of tremendous profits in the very mines that were struggling for financial existence. In Chapter V of this Report—on operators' profits and losses—there is a discussion of the reasons for operators

wishing to keep private their own business affairs and the way in which that desire is recognized even in the most advanced labor legislation. It is a question, however, whether what might possibly be risked by a full disclosure of the actual position would not be more than compensated by the gain in frankness during wage negotiations. Within whatever limits, then, may be imposed by other considerations, the Commission would urge the supreme importance of dealing with facts known to and accepted by both sides.

Beyond these general suggestions, two specific remedies for strikes have been proposed from time to time and may be referred to briefly:

Nationalization of Mines: This will be dealt with more fully in the discussion of general problems but, meantime, there is no proof that strikes are done away with by State control of an industry.

Compulsory Settlement: No successful application of this principle has come before the attention of the Commission. Several of the witnesses were emphatic in stating that the workmen would not forego their right to strike and there are obvious difficulties in attempting to enforce conditions of operation on an unwilling operator. The Commission is not prepared to recommend either of these remedies.

The operation of the conciliation machinery, which has existed in the Dominion of Canada for some years, namely, the Lemieux Act, has recently been interfered with by the decision of the Privy Council declaring it to be *ultra vires* as applied to civil rights under provincial control. After this decision, all of the provinces except Nova Scotia withheld action to allow the Dominion Government to amend the Lemieux Act. Last session this Act was amended to make it apply to what by the B.N.A. Act are made Dominion matters, to alien corporations, to those incorporated by Dominion charter, to such matters as the Parliament of Canada declares to be of general interest or a national emergency, to disputes not within the exclusive provincial jurisdiction and to anything which a province may legislate to bring under the Act. This amendment was assented to on June 12th, 1925, and the Provincial Legislature has not met since. As active negotiations are under way regarding this matter, the Commission has not thought it necessary to go very deeply into it but is of the opinion that either by passing its own Industrial Disputes Act or by arranging in some such way as the above to make the Dominion Act effective within the province, no time should be lost in re-establishing this type of conciliation machinery which, in the opinion of many observers, is held to be the most successful yet devised for the purpose.

In addition the Commission would make the following definite suggestions:

Instead of the 30 day period now allowed by the agreements, negotiations should start 60 days before the termination of those agreements. If a settlement satisfactory to both parties has not

been reached in 30 days, it should be obligatory on them to call for a Board under the Industrial Disputes Act. When that Board has announced its findings, arrangements should be made for a compulsory ballot on them by the rank and file of the workmen concerned.

If this greater length of time to negotiate and the compulsory investigation of the matter prove ineffective, more expensive and elaborate machinery will be required, such as an independent body continuously investigating and publishing the facts.

All that is in the minds of this Commission to suggest, therefore, is the simplification of the decision that has to be reached in these all-important matters and a clear statement of the facts to be decided without interfering with the freedom of that decision by the major parties concerned. Both should realize, however, the disastrous effects of strikes on their industry. Time and again throughout the present investigation, the Commission has been met with the statement that the 1924 strike had killed this, that and the other market, which was going to be very difficult to recover. Even to the extent to which the result was a shifting of business from one district to the other within the province, it was not satisfactory. If both sides would realize that continuity of output is the great essential to prosperity for both, they would each be prepared to make concessions to ensure peace in the industry.

CHAPTER VIII.

LEGISLATION AND GOVERNMENTAL ACTIVITIES

A. ALBERTA MINES ACT AND BRANCH

1. The Mines Act of the Province of Alberta

The Mines Act, practically in its present form, was passed at the Spring session of the Legislature in 1913 and came into effect on August 1st of that year. It was the result of a Commission of three, one representing the employers, one labor and one the Government. The chief model used was the British Act, of 1909, with such modifications as, in the opinion of the Commission referred to were thought necessary to fit conditions here. The British Act on which the Alberta Act was modelled was itself the result of numerous commissions on each individual subject, such as timbering, explosives, ventilation, haulage, etc. Local records are incomplete; but statistics in other countries seem to show that the coal miner is subject to an average health hazard but to a higher accident hazard than the workers in most other industries. The chief object of legislation such as the Mines Act is safety.

In reply to the criticism, expressed by some, that the coal industry of Alberta was handicapped by being required to carry on under an act passed for an old established country like Great Britain, the Chief Inspector pointed out that, no matter how young the industry might be, there was the same liability to accidents here. Indeed, he might have gone farther and said that there was more liability and greater need for safety precautions. As to the British legislation, the Sankey Commission stated that the rate of accidents in Great Britain was lower than the rate in any other principal coal producing country; the Government had followed the practice of the most progressive collieries and prescribed it for the remainder. Before proceeding to a number of suggestions and minor criticisms, it will be well to record that this Commission, in the replies to the questionnaires and in the evidence, received general commendation of the Mines Act. Operators stated that rightly interpreted it was a beneficial and necessary law.

This commendation of the Act, while very general, was not universal. One criticism on the part of the operators was its tendency, in their opinion, to increase the cost of production. This feature has been discussed elsewhere. One or two operators thought there were too many laws as to safety appliances; and that these should be left more to the good sense of the Mine Manager, who was taking all the risks along with the workmen and was not going to do anything to create a menace or a danger to himself. It clearly would not be wise to rely altogether on the

individual management. On the analogy of the British practice stated above, the Government must see that good management in these respects is made universal. The chief general criticism of the Act was that what was, perhaps, necessary in certain districts in the province might be irksome and unnecessary elsewhere; and the suggestion was made for zones with variations in the regulations. At the present time, the Act and regulations make a discrimination, not between districts but between conditions, many things being required in safety lamp mines which do not apply to mines which are allowed to use open lights. The Commission thinks that this is the only safe line to draw. A number of specific suggestions will now be taken up in the order of the section of the Mines Act to which they apply:

Hours of Labor: Section 8 provides, with certain exceptions, that no workman shall be below ground in a mine, for the purpose of his work or of going to or from his work, for more than 8 hours during any consecutive 24 hours. One or two replies to the Union Questionnaire suggested this be changed to a 6-hour day and even to a 5-day week. On the other hand, some operators would like to have machine runners work more than 8 hours in certain circumstances. As stated in discussing hours of labor (Chapter VII., Section 30), this Commission has no recommendation to make in this matter.

Register of Hours Worked: Sections 9 and 10 deal with recording the hours worked and give the workmen a right to appoint someone to observe the times of lowering and raising. A book is to be kept in which, among other things, are to be entered the cases in which any workman is below ground for more than the time fixed by the Act and the cause thereof. The Commission found a dispute at one mine as to the right of the workmen's representative—in this case the check weighman—to look at the regular lamp book in which was entered the time of each workman's receiving and returning his lamp. This book apparently was distinct from another book in which were entered the total number going to work at a certain time. There is a provision later on in the Mines Act (Section 91) which says that "anyone having the written authority of the Chief Inspector" may see the books but, by the construction of the section this is limited to books kept in connection with the general provisions, being Sections 58 to 91. It seems logical to this Commission that the right to be present for observation given by Section 10 should carry with it the right to examine the book required to be kept by Section 9 and that Section 10 should be amended to provide for this.

Provisional Certificates: Sections 26 and 28 deal with provisional certificates to act as overman and, in its latest form, this provisional certificate requires the holder to have a third-class certificate granted under the Mines Act if more than 5 persons are employed in the mine and, even so, not more than 10 persons may be employed. In any case, all shots fired in the mines for which such a provisional certificate is granted must be fired by the holder of the certificate. A number of suggestions were made

for a much stricter method of granting these certificates or for their discontinuance altogether. This brings up the whole problem of the very small mines throughout the province; and discussion will be postponed until Chapter IX. dealing with such matters.

Payment of Wages Fortnightly: Section 34 provides that all wages shall be paid on Saturday and at least once a fortnight. If Saturday is a holiday, they are to be paid on the Friday before. As discussed in the chapter on Labor Relations (Chapter VII., Section 24), some of the unions put forward a request for the payment of wages weekly. On the other hand, many operators desired payment twice a month to conform with the bookkeeping imposed on them by the making of monthly returns and by the general commercial practice of the country. This matter has been more fully discussed in the chapter above referred to and certain alternatives suggested.

Payment by Weight or Measurement: Section 35 provides for payment of contract men by weight or measurement. The strong desire of union witnesses for all payments to be made by weight, which is the almost universal custom, has likewise been fully discussed in the chapter on Labor Relations (Chapter VII., Section 28), and the Commission has no definite recommendation to make.

Check Weighman: Sections 37-41 deal with the appointment of a check weighman or checker and the privileges and responsibilities of such officials. Section 37, Subsection 2 reads: "The check weigher shall be a practical working miner of at least three years' experience, etc." This is interpreted to mean working at the particular mine in question at the time of his election. The union has been endeavoring, for some years, to have this restriction removed so that they can appoint whom they see fit to act as check weighman. They state quite frankly that they desire this change in order that they may find a place for a man who, otherwise would not be employed at that mine. The check weighman is an employee of the local organization, which elects him and fixes his rate of pay. This is thought to give him a certain independent standing and, for this reason, nine times out of ten, he is one of the members of the pit committee. As such and for general reasons, it would seem desirable that he should have an acquaintance with the mine, which is ensured by stipulating that he shall be working in it at the time of his election. There would seem no doubt that the provisions of the Act as now interpreted are sufficient to secure a weighman who is entirely satisfactory as such. To allow the desired change would open the way to the use of this section for an indirect purpose; and this might often prove a source of friction. The present provision for the appointment of a check weigher seems quite satisfactory.

A suggestion was made that the miners' representative or check weighman be allowed to weigh the cars alternately with the Company's weighman. The desire behind this suggestion would be equally well satisfied by the installation of an automatic

weighing machine. No proof was brought forward that the Company weighman required checking up in the way suggested.

Some dissatisfaction was expressed because all of the mines did not have test weights to test the scales. The Act says that a check weigher shall have every facility "for examining and testing the weighing machine." The suggestion is that this be made more specific to require mines to keep 1,000 lbs in test weights for this purpose. For the reasons given in a former chapter (Chapter VII., Section 40), the mere possession of these weights would not solve the problem; and this Commission would prefer a provision making it compulsory to have inspection of the scales by the regular Government Inspectors, every three months while the mine is working, instead of annually as at present, the representative of the men to be notified to attend the tests. If, in between these tests, there are evidences that the scales are not in order, a special inspection might be called for, the expense to be paid by the operator if the scales be found to require attention; otherwise the special inspection to be at the expense of those making the complaint. Besides being ineffective, it would work a hardship on a number of the smaller mines to insist on their carrying 1,000 lbs. of test weights.

Removal of Check Weighman: Section 40 of the Act provides for the removal of a check weigher after a hearing by a District Court Judge. One request was received to have this clause struck out; but the Commission can see no reason for this, as there is ample provision for the hearing of the case before the Judge.

Operators' Monthly Returns: Section 43 deals with monthly returns and it is this provision which is in conflict with the requirement that wages be paid fortnightly.

Mines Inspectors: Sections 50-55 deal with the appointment, duties and powers of Inspectors. A number of unions requested the Commission to recommend that provision be made to have a practical miner accompany the Inspector on his visits or that someone, directly representing the men, should be appointed to act along with the present Mines Inspectors. The suggestion was that this man be paid by the Government thus being in effect a duplication of the inspecting force. Having regard to the provisions of Section 90, the Commission cannot see anything in this suggestion. Numerous requests were made to have the Inspector appointed by the miners of the district or recommended by them for appointment. The Commission does not think that the Government should be trammelled in its choice or relieved of its responsibility for these appointments. On the other hand, a number of the operators expressed the view that the District Inspectors are given too much power in view of their training and experience but, as this is not so much a matter of the legislative powers as of the administration of the Department, it can be more appropriately discussed later (Section 4 of this chapter).

Coroners' Inquests: Section 57 deals with coroners' inquests and gives a representative of the workmen of the mine liberty to examine witnesses. The Commission has been asked to recom-

mend the insertion of a provision for notice of such inquests being given to the workmen. While the time and place of the holding of such inquests are generally matters of common knowledge, the Commission suggests that a provision be added to this section to the effect that a notice in writing, giving the time and place for the holding of an inquest, shall be posted in a conspicuous place, where it can be seen and read by any person employed in or about the mine.

Ventilation: Section 59 deals with ventilation. The complaints were not as to the provisions of the Act but as to the enforcement of those provisions, which is discussed later in this chapter (Section 4). Without proper ventilation, not only are the comfort, health and efficiency of the men injuriously affected; but a smoky atmosphere prevents a proper inspection of roof conditions and increases accidents.

Safety Lamps: Section 65 deals with safety lamps and other provisions are found in part of section 114. The definite suggestion is made that the Act should call for an approved electric headlight, in addition to a flame safety lamp where such is required. While sympathetic with the need for as good light as is practicable, to recommend under present circumstances that electric headlamps be made compulsory for all mines would impose a hardship on the small mines of the province. Such lamps require charging facilities and are, in themselves, expensive to provide and maintain. The Commission, however, recommends that, in mines where safety lamps are required, it be made compulsory to use an approved type of electric headlight. Good lights are vital as a safety measure.

Ambulances, etc.: Section 86 calls for an ambulance, etc., to be kept at the mine. One union wishes to add a set of breathing apparatus and another union would have the training and retraining of a mine rescue crew made compulsory. The provision of mine rescue cars and the training of mine rescue crews will be dealt with in the discussion of the Workmen's Compensation Board. Meantime, it does not seem practicable to make such things compulsory in all the mines of the province.

Wash-houses: Section 88 deals with wash-houses. (See discussion under Regulation 25 later in this chapter.)

Workmen's Inspection Committee: Section 90 gives the workmen the right to appoint any two persons "who are not Mining Engineers" to inspect the mine under certain conditions. Apparently, the restriction arose from a desire to prevent one company sending an engineer to spy out another company's property. Incidentally, there is no definition in the Act of the term "Mining Engineer"; so the provision is somewhat indefinite. Subject to whatever representations the operators of the province may care to make to the Government on the subject, this restriction seems to the Commission to be an artificial one and, as requested by many of the workmen's representatives, it might well be deleted. The appointment of such a Workmen's Inspection Committee was stated in evidence to be welcomed by operators and to be taken

advantage of to a considerable extent. On the other hand, certain of the union officials said that men were afraid to act on this committee for fear of discrimination against them later on and, also, that it was difficult, in some instances, to get the workmen to agree to the necessary assessment to cover the cost. For both of these reasons, the Commission was asked to recommend that the appointment of such a committee be made compulsory, as it is in the case of the British Columbia Act. The provision in the B. C. Act is Rule No. 37 of section 91, which section states: "The following general rules shall be observed so far as is reasonably practicable in every mine." After a permissive clause very similar to section 90 of the Alberta Act, this rule goes on to provide that, where the miners fail to appoint such a Committee, the Chief Inspector of Mines shall select from the men, in alphabetical order where possible, two competent miners and the operator is to withhold from the wages of the underground employees a sufficient sum pro rata to remunerate the Inspection Committee. The provision does not seem quite definite as to the number of inspections to be made. The Commission recommends the inclusion in the Alberta Act of a similar provision for a compulsory inspection, if the men fail to take advantage of the present provision. Many operators in the province welcome such inspections and the other mines would probably be the better for them. There remains the question of the appropriate penalty for non-compliance with such a provision but that matter can perhaps be left until it develops that workmen so appointed fail to act. A copy of the report of such a committee is to be sent to the District Inspector. It might be better if this report were sent direct to the office of the Chief Inspector; because the main purpose of such a committee is to check the work of the District Inspectors themselves.

Fire Boss: Section 111 deals with the duties of the examiner or "fire boss." There were many suggestions that the fire boss should be made a civil servant, responsible to the Government for the safety of the men and to be paid by the Government. Under such an arrangement, the fire boss would become a Resident Inspector so far as safety provisions were concerned. The reasons given for this suggestion were that, at the present time, the fire bosses not only perform the duties connected with safety, which are supposed to be their statutory function, but act in other capacities, the charge being made that they were apt to allow safety to become a secondary consideration. At the present time, the fire bosses are employed as a kind of General Inspectors of the underground work. Indeed, it is deemed to be good practice to give them authority over the driver bosses, timbermen, etc.; so that they can give the necessary orders. It may be that some fire bosses are timid about performing their statutory duties and calling on their employer to incur expense to remedy conditions; but the proposal to make them civil servants with no other duties in the mine would be that much of an added burden to the industry, because someone else would have to be employed to perform their general services. There are something like 250 of these officials in the province and to pay their salaries would add

considerably to the expense of administering the Mines Branch. Fire bosses are only required where safety lamps must be used and a great many of the complaints as to underground conditions come from other mines, so that the step proposed would not be a remedy in those cases. Altogether, then, the Commission thinks the remedy for whatever is amiss can be found in methods of inspection rather than the very expensive step of having a great number of additional Government Inspectors. Meantime, the fire bosses have very important statutory duties, being in effect underground policemen. Like policemen they should not, in general, carry out their duties by giving warnings but should immediately bring offenders to justice.

Shot Firing: Section 112 deals with firing shots and the duties of shot lighters. The suggestion here is that certain legal hours be fixed for the firing of shots, so as to minimize the smoke nuisance, which results from promiscuous shooting throughout the shift. It would be impracticable to impose rigid limits on the time for shooting. The shots do not always produce the desired effect. When using machines to cut the coal, the shots must be fired and the place cleaned up in time for the next shift. The remedy for the trouble complained of must be sought in better ventilation and especially, in having the work proceed in a systematic way, as it will be carried out where there is a sufficient proportion of experienced miners in the working force.

Timbering: Section 115 (4) (c) requires each person in charge of a working place to set sufficient timber to support safely the roof and sides. One local union attributes accidents to machine men as due to improper timbering and suggests that a properly qualified timberman be employed especially for the purpose of timbering the working face before the machine man gets in. Where inexperienced men are loading coal after machines, provision for an experienced timberman seems necessary. See discussion later of certificates of competency. (Section 2 of this chapter.)

Power to Make Regulations: Section 139 gives the Lieutenant Governor in Council powers to make regulations. The Commission has been asked to recommend that these powers be rescinded and that it be necessary to make all changes by legislation, with full opportunity for discussion and criticism. The reasons given for the request are that, while the Act itself has not recently been amended without the Government giving operators an opportunity to discuss the proposed amendments, the same has not obtained in respect of changes by Orders in Council, which would have much the same effect. The Commission's recommendation for a Mines Department with an Advisory Council (Sections 25 and 26 of this chapter) is designed to take care of this point. All amendments to the Mines Regulations should first be laid before the Advisory Council.

Non-Payment of Wages: The 1925 amendments to sections 34, 43 and 130 of the Act have to do with the non-payment of wages and provide that the Chief Inspector may ask a judge to

appoint a receiver of any mine, which shows wages unpaid or does not reply to the question on this subject in the return.

These provisions do not appear to be sufficient for the purpose. Instead, this Commission would recommend that the necessary amendments be made to require each operating mine, within three days after every pay-day, to mail to the Department a statement that all wages have been paid. The nature of this reply or the absence of a reply will give much more prompt notice of trouble than the present method of having a question in the ordinary monthly return. Incidentally, a careful definition of "wages unpaid" will have to be worked out because of the practice by some men of allowing their pay envelopes to lie in the mine office uncalled for. Strictly speaking, such wages are unpaid; although the money has been provided for the purpose and the workman alone is responsible for the fact. In cases of trouble on this score, until all back wages have been paid, the mines should not be allowed to be operated again either by the owners or by the same or other lessees. All such mines, by whomever operated, should, for twelve months after the failure to pay wages, be required to put up with the Department in cash or by way of a guarantee bond enough to meet the fortnightly pay. Such mines should make a detailed return each pay-day of the wages paid and be required to keep their deposit or guarantee bond up to the maximum thus shown to be required. After twelve months without further difficulty as to unpaid wages, the special provision could be allowed to lapse and the mine revert to the condition imposed on all operators of sending the notice within three days showing all wages paid. For a second or subsequent offence, however, the special provision for a guarantee bond should remain in force for twenty-four months. With the necessary modifications, the foregoing prohibition from operating until arrears of wages have been paid and the guarantee required should apply also, to the particular operator, if he attempted to operate another coal mine within the province. By thus holding the property itself responsible, as well as the particular operator, the Commission considers that an effective check would be put on an abuse to which coal mining in this province seems to be exposed in an exceptional degree. At the same time, the course suggested would impose a minimum of hardship on the ordinary operator. A pad of forms could be provided for the fortnightly notice to the Department, stating that all wages have been paid. Appropriate special penalties should be provided for a false return as to the payment of wages. The Commission has not investigated the precise form these amendments should take to make the provisions legal and effective; but, somewhat on the analogy of mechanics' lien acts, it should be possible to hold the property, as well as the operator, responsible for non-payment of wages and to introduce safeguards against recurrence, in the way suggested.

Arrangement of Mines' Act: Regarding the Mines' Act in general there are a few details in which the arrangement is not good. Provisions dealing with the same subject are found in widely separated sections and even hidden under sections dealing

with another subject. For example sections 65 and 114 have to do with safety lamps; section 66 treats of explosives but there are further provisions put in as sub-sections of 114, the heading of which is Safety Lamps. At the next revision of the Statutes it would be an aid to clearness if all provisions dealing with the same subject were assembled.

2. Suggestion for Certificate of Competency

A most important request for amendment of the Mines Act is that a certificate of competency should be required for all miners and other mine workmen employed in especially hazardous or important work underground. This suggestion was made in many different forms. Several of the replies to the union questionnaire suggested that no inexperienced man should be permitted to work at the coal face; but that any man, working at the coal face, should have at least two years' previous experience in various other work in the mine. Another suggestion was that before anyone should be allowed to work underground he must produce a certificate to show that he understood the safety regulations. In the chapter on Mine Workmen (chapter VII, section 35), there is a short discussion of this problem leading to the conclusion "that a *prima facie* case has been made out for instituting in this province a system of certificates of competency." It should be mentioned that the men themselves are divided on this matter. There is a feeling, too, in certain quarters that such a system might create a monopoly and that if all the certificated men were on strike there must be some method of meeting the situation. There is no doubt, too, that such a system might be difficult and expensive to make effective under the conditions of the coal industry in Alberta with so many very small mines operating. In older countries, where men grow up with the industry, the need does not arise; but, in British Columbia for example, the law requires such certificates. Oral examinations are held and certificates issued. There is a provision that a man may be employed until the next ensuing examination but, if not successful in getting a certificate at that examination, he shall be forthwith discharged.

There is no regular method of training miners in this province. It would undoubtedly tend towards safety if every man who is given charge of a place in a mine was required to show that he knew the provisions of the Mines Act, insofar as they affected the work he had to do. Such knowledge can, probably, only be acquired by working with an experienced miner for a number of years; and any examination must look to such practical knowledge, rather than a mere memorizing of the provisions of the Act; but, with proper standards of examination, such training with experienced miners would become the general practice and, then, a certificate of competency would command respect and be of advantage in the industry. As stated in the other chapter, this Commission recommends that there be a special conference of operators and miners with the Government to determine the details, such as the standards to be set, the composition of examining boards, fees, penalties, special temporary permits, etc.

3. Regulations of the Mines Branch

Recording Gauges: Regulation No. 6 calls for an automatic recording water gauge in connection with every ventilating fan. This was objected to by one witness as costing a small mine a good deal more than the simple water gauge, formerly in use and, in the opinion of the witness it did not make the mine any safer. He said that unless both gauges were watched to remedy anything that went wrong the damage would be done. However, it may be of advantage in certain cases to fix responsibility and the expense of the recording gauge is not very great.

Wash-houses: Regulation No. 25 deals with wash-houses. For a little over a year past, the plans of wash-houses must be approved by the Department. While there were a few suggestions for certain specific requirements, the regulations in themselves seem adequate. It comes down to a question of inspection and enforcement, and the matter will be discussed under that heading. (See section 4.)

Emergency Hospital: The same regulation calls for the provision of an emergency hospital. One union suggested that the responsibility of operators in this connection should be plainly set forth and enforced. The requirements of the regulation seem clear enough and it becomes a matter of inspection and enforcement.

Electrical Regulations: Regulation 26 deals with the use of electricity in mines and has been the cause of a number of objections on the part of operators. Their contention is that, in the application at least, these electrical regulations prohibit some things that are allowed by the regulations in other countries. The object of the regulations is to promote safety. Whether or not they go beyond what is required for safety is a highly technical question with which the Commission cannot attempt to deal.

Exemptions: Regulation No. 27 gives the Minister power to grant exemptions in emergencies or special circumstances. The Commission understands that this is intended to apply only to Regulation No. 26 on electrical equipment but, from the way in which it is worded, it seems to apply to all the regulations preceding it. The intention should be made clear.

4. Alberta Mines Branch

The Mines Branch of the Province was connected with the Department of Public Works until about 1914. It then became a branch of the Provincial Secretary's Department and finally, for the last two years, has been under the Executive Council with the Prime Minister as Minister for the Branch. Its function is the administration of the Mines Act and the inspection of coal mines. The staff consists of a Chief Inspector, six District Inspectors and clerical assistance in the office. At the time of

the public sessions of the Commission the work of the District Inspectors was given as follows:

Inspector	Crowsnest	22	Mines—	1923	output	1,610,000	tons
"	Lethbridge	112	" —	"	"	740,055	"
"	Drumheller	89	" —	"	"	1,376,190	"
"	Camrose	113	" —	"	"	528,812	"
"	Edmonton	42	" —	"	"	1,182,920	"
"	Edson	21	" —	"	"	1,428,846	"

Sixteen years ago there were only the Chief Inspector and one Inspector in Calgary. There has been no increase in the inspecting force in the last five years. The Commission has been furnished with the following comparison of the average number of men employed per each District Inspector of Mines, in the provinces of British Columbia and Alberta:

British Columbia	1,350	men	per	District Inspector
Alberta	1,052	"	"	" "

In British Columbia the working force includes the metalliferous mines as well, while in Alberta it is for coal mines only. It should be noted, however, that the British Columbia mines are on the average larger and the work is therefore more concentrated.

As stated in numerous places elsewhere in this report, the Commission has received many suggestions for a stricter enforcement of the Mines Act. The general view is that the Act is adequate if enforced. The plan is stated to be that the bituminous mines should be visited at least once every two months and the other mines once every three or four months. The Commission understands that the District Inspectors are under instructions to arrange their own time for visits to mines and not to let the mine know in advance when to expect them. It seems to be the general impression, however, that often the Inspectors make periodic visits that are pretty well anticipated. One witness, for example, said that when he was about to bring an Inspector down he was told that the Inspector was coming. Many of the requests by the unions were for more frequent inspections, one even going so far as to ask for daily supervision of all gaseous and dusty mines. This fits in with the idea of having the fire boss employed by the Government. It is not, however, in the opinion of this Commission necessary to lay stress on the frequency of the inspections, provided they be made in the proper way. In Great Britain, for example, no attempt is made to inspect every mine at short intervals. The chief demand as presented to the Commission has been for more thorough inspections. Witnesses thought that each Inspector was responsible for too many mines to be able to give each the attention it required. In particular, they asked that the inspectors would devote more of their time to ventilation and to conditions in the bunk-houses and wash-houses.

This criticism of the thoroughness of the inspection and the enforcement of the Act and regulations has been met in two ways.

The Chief Inspector of the Province, in the course of numerous conferences at which he has rendered most valuable assistance to this Commission, pointed out the difficulties of insisting on the same conditions in all parts of the Province; what could be achieved at larger and well established mines might cripple the smaller operations. Undoubtedly, up to the present at least, there has been much force in this argument. The other line of answer to the criticism, however, is that taken by one or two of the District Inspectors in letters to the Chief Inspector dealing with special points. This consists in a wholesale denial that any ground for such criticism exists. The Commission is bound to record the fact that it finds this reply far from convincing. For example, one Inspector writes of a certain district that "the wash-houses are all well kept, well ventilated, well lighted and well heated; the ventilation in the mines is good . . . . . Each man has two places. He shoots always a place at the finish of the shift which gives him coal for the following day. This is the practice which has always been followed." With the evidence before it as to this particular district, coupled with what members of the Commission themselves know about the matter, the Commission does not hesitate to say that the Inspector, signing the above report, must be either unaware of the conditions or unable to distinguish good from bad; neither of which alternatives leaves him in a very satisfactory position.

It is only fair to the Inspectors in general to record that the criticism of their work is by no means universal and, even in the above case, the Commission would have been more disposed to make allowances, if it had not been for the attempt at a complete refutation above quoted. It is undoubtedly difficult to obtain enough fully qualified men for this work. It must be frankly recognized that, at the scale of pay, good men are apt to look on it as only temporary employment, from which they may step up to better positions at the very mines which they have been inspecting. Perhaps, then, there may have been some occasion for the comment of one of the local unions that the Inspector "should take more notice of the men that do the work instead of the boss." The Commission is informed that in older countries, as, for example, in Great Britain, a District Inspector gets more salary than the average Mine Manager and has to pass a more difficult examination. The post of Chief Inspector of Mines is about the highest paid position in the profession. It can readily be understood that with such a staff inspection carries much more authority and is much more effective. The visits are not especially frequent but, for anything that is found to be amiss or that is proved to have happened, the appropriate penalties are enforced.

All the suggestions, therefore, for daily inspection by Government officials and for the appointment of Inspectors by the workmen proceed from the belief that a more rigid enforcement of the Mines Act would reduce the number of accidents and ensure better working conditions for the men. Relatively few complaints are made as to the provisions of the Act itself. As to its enforcement, however, this Commission concludes that the time has

come, as in the case of housing, when the coal industry of Alberta must be considered to have passed out of the stage of allowances for pioneer conditions and when the various provisions of the Act should be enforced or repealed, if found unworkable. The Commission thinks that the Chief Inspector of Mines should be relieved of the other onerous duties he now has to perform in connection with the work of the Compensation Board and thus be left free to give his whole attention to the enforcement of the Mines Act, making it possible for him to spend more time in the field, investigating special matters and checking up the work of his subordinates.

B. THE WORKMEN'S COMPENSATION ACT AND BOARD.

5. The Workmen's Compensation Act (Accident Fund) of the Province of Alberta

One commonly accepted theory as to the underlying principle of workmen's compensation legislation is that, if a man is killed in the course of his employment and leaves nothing for the support of his dependents, the State is compelled to take care of them. Similarly, if a man is injured, the borden of supporting both himself and his family may come on the community. Therefore the State says that the particular industry must contribute its just share. Under this theory, there is no attempt to compensate the workmen for his loss of earnings but merely to take care of the burden on society as a whole. Another theory of the reason for such legislation is the desire to do substantial justice, without the expense of the common law procedure. Under the common law, the individual operator was liable for accidents due to his neglect. There were other accidents for which the workman himself must take responsibility; but the process of proving in which class the particular accident should be placed meant great delay and expense. As it was very well put by one of the witnesses before the Commission: "It was decided it would be better to say that every operator and every industry would be liable for all accidents and that somewhere between full liability and no liability there should be a compromise." There was the further advantage in this that the very heavy legal costs of trials and appeals were saved to one or the other party or to both.

Having been established on one or other of the above general principles or a combination of them, there have been attempts to convert compensation into unemployment insurance. Many operators testified before the Commission that the original Act had been welcomed, as something equally beneficial to the workman and the operator but there were complaints as to the changes that have been made in the Act since its inception.

Before proceeding with the more general discussion, it will be well to take up in detail certain sections of the Act and the recommendations that have been made in respect of them.

Constitution of the Board: Section 3 provides that the Workmen's Compensation Board shall consist of not more than three

members to be appointed by the Lieutenant Governor in Council. One or two workmen who appeared before the Commission thought that the men should have better representation on the Board, the specific suggestion being that the miners should have one of their membership, recommended by the different local unions, to represent them on the Board at the Government's expense. The Commission has found no general desire for any change in the constitution of the Board, one member of which was formerly President of the Alberta Federation of Labor. The Secretary-Treasurer of one of the local unions said that "the Compensation Board so far as my mind goes are a board composed of level-headed men and are prepared to do justice when they have things put clearly to them."

Jurisdiction of the Board: Section 13 gives the Board exclusive jurisdiction and makes its decisions final and conclusive and not open to appeal or review, except by itself. Several requests reached the Commission for a recommendation that appeals be granted, the view being expressed that, without such right of appeal, the Board was apt to become set in its views and to render its decisions on precedent rather than equity. Those making this suggestion recognized the difficulty on the score of expense and thought the appeal might be limited to going before a District Court Judge in Chambers. Others wanted the right of appeal to a Member of the Provincial Cabinet. While there is a natural desire for a second chance to get exactly what one desires, to begin the process of appeal would open the way for all the delays and expenses of the old common law procedure. Even granted that an individual may suffer under the present system, all would suffer if it were changed. It may be noted, in passing, that Sub-section 4 (c) of this section gives the Board exclusive jurisdiction in determining the amount of average earnings. This point will be referred to later on in discussing that subject.

Power to Make Regulations: Section 15 gives the Board the right to make regulations. The same complaint exists in respect of this power as in the case of the regulations under the Mines Act. It is strongly felt by many operators that, before regulations are made which are going to affect very seriously their operations, they should at least have an opportunity of explaining their side of the case. This power to make regulations is given in more detail under Section 29 of the Act and, in both cases, this Commission would recommend that, so far as the mining industry is concerned, these powers be changed to the right to make recommendations to the Lieutenant Governor in Council for such regulations. Under the Mines Act, the Lieutenant Governor in Council has power to pass orders dealing with the self same matters. There are thus two independent authorities dealing with the same thing. It is true that, in the past, there has been a link between the two owing to the fact that the Chief Inspector of Mines is also Chairman of the Compensation Board. This is not necessarily so nor, in the opinion of the Commission, is it desirable. Therefore, so far as the mining

industry is concerned, this power to prescribe rules must be brought under unified control. As suggested in the comment on Section 139 of the Mines Act this Commission is recommending the establishment of a Mines Department with an Advisory Council. If the Workmen's Compensation Act were changed to require all regulations affecting the mining industry to be passed by Order in Council, the Government in considering such regulations would act after consultation with the Mines Department and the Advisory Council.

Assessment: Section 20 gives the Board power to assess on the employers of each class what it shall deem sufficient to pay expenses "including mine rescue and First Aid work," to pay all amounts payable from the accident fund, to provide capitalized reserves and to provide a disaster fund. An important part of this section is the provision that the excess over $2,000.00 a year earned by any workman shall not be included in the basis of the assessment.

Various Powers of Board: Section 29, as referred to above, deals in detail with various powers of the Board, including the determining of suitable safety devices, requirements for sanitation, the prevention of disease and the making of regulations in this connection. So far as regards the mining industry, these powers must be brought into accord with the powers given to the Lieutenant Governor in Council by the Mines Act, as stated above under Section 15.

Separate Accounts and Demerit Ratings: Section 33 states that "separate accounts shall be kept of the amounts collected and expended in respect of each employer, but for the purpose of paying compensation each accident fund shall nevertheless be deemed one and indivisible." It goes on to state that, where, in the opinion of the Board, sufficient precautions are not taken for the prevention of accidents or where the sanitary and health conditions are not proper, the Board may add such percentage as it may deem just. The provisions of this section seem to the Commission not to contemplate the form of demerit ratings, enforced by the Workmen's Compensation Board under Regulation No. 11, as will be discussed under that heading later in this chapter.

Conditions of Compensation: Section 34 provides that compensation shall be paid, "unless the injury is attributable solely to the serious and wilful misconduct of the workman and death or serious disablement does not result from it." Incidentally, in the Acts on which this section is modelled the phrase reads "serious *neglect* or wilful misconduct." A sub-section was recently added to this section to make frostbite an "accident" as from the 30th September, 1924.

Waiting Period: Sub-section 6 of Section 34 defines the "waiting period," which is an important variable factor in compensation legislation. This sub-section reads: "6. If a workman is disabled for a period of ten days or more, he shall be paid compensation from the day of the accident but, if he is disabled for

a period of less than ten days, he shall be paid for and from the fourth day after the accident." Several requests were made to shorten or abolish the waiting period. The purpose of such a provision is to reduce the number of claims for comparatively trifling accidents. As an indication of the period of disability the Commission secured from the Board a statement of the claims "finalled" during the month of October, 1925. Stating this cumulatively gives the following result:

TABLE 118—*Workmen's Compensation claims, finalled October, 1925, stated cumulatively, that is each number of claims includes those for the number of days mentioned and all the claims for a less number of days.*

1	claim	for	2	days		93	claims	for	18	days	or	less
6	claims	for	4	days	or less	94	"	"	20	"		"
11	"	"	5	"	"	95	"	"	21	"		"
19	"	"	6	"	"	99	"	"	22	"		"
26	"	"	7	"	"	101	"	"	24	"		"
32	"	"	8	"	"	106	"	"	25	"		"
37	"	"	9	"	"	110	"	"	26	"		"
46	"	"	10	"	"	111	"	"	27	"		"
54	"	"	11	"	"	113	"	"	32	"		"
66	"	"	12	"	"	114	"	"	34	"		"
74	"	"	13	"	"	115	"	"	35	"		"
80	"	"	14	"	"	116	"	"	36	"		"
84	"	"	15	"	"	117	"	"	38	"		"
87	"	"	16	"	"	118	"	"	40	"		"
91	"	"	17	"	"	119	"	"	46	"		"

From this it will be seen that more than half of the claims were finalled within 12 days. More men returned to work after the 12th day than at any other single period. The above is interesting, but of course nothing could be based on the record for a single month. The report for the year 1923, the most recent year of normal operation in the industry, shows of the claims finalled for that year that

923 cases of temporary disability terminated within 1 week after the accident;

1252 cases of temporary disability terminated in the 2nd week after the accident;

753 cases of temporary disability terminated in the 3rd week after the accident;

399 cases of temporary disability terminated in the 4th week after the accident;

857 cases of temporary disability terminated at varying periods up to the 76th week.

These figures indicate to how great an extent the shorter term disabilities predominate and the great importance of the period of waiting time. If for the claims finalled in the year 1923, the period of waiting had been two weeks less than half the accidents would have received compensation. The above figures for the year 1923 apply to all classes while the figures for October, 1925, are for the coal industry alone. A comparison of the waiting period in Alberta with what obtains elsewhere is given later in

this chapter. Meantime, there has been a suggestion that malingering is very apt to occur at the end of the waiting period. Compensation is paid for the first three days, only if the disability lasts more than ten days. The 11th day of disability therefore really brings four days' compensation. From the figures it is not possible to say whether or not this is the case.

Notice of Accident: Section 42 provides that notice of an accident shall be given by the injured person to his employer and that the claim on the Board must be made within 12 months of the accident or, if death results, within 12 months from the date of death. Some discussion occurred at the hearings as to the ignorance of certain workmen about what was required in the way of making a claim; but this is not deemed to be of any practical importance as cases must be very rare where an injured workmen fails to get in his claim.

Death: Section 49 deals with the scale of compensation in the case of death. This is given in tabular form later in this chapter where it will be discussed.

Permanent Total Disability: Section 52 gives the scale of compensation for permanent total disability as a weekly payment during the life of the workman equal to "62½% of his average weekly earnings." Permanent total disability is to be conclusively presumed in certain cases; otherwise it rests with the Board to determine. The computing of the average weekly earnings will be discussed under Section 56. A number of recommendations were made for increases in the scale to 75% or 100% of the earnings. This point will likewise be deferred until the general discussion later on in this chapter.

Permanent Partial Disability: Section 53 deals with permanent partial disability and provides for compensation at 62½% of the loss in average earnings (but see Section 55.) Requests were made that a scale be fixed by law and not left to the discretion of the Board. It will be interesting to record that a scale has been adopted by the Board in certain cases of permanent partial disability owing to accidents to the eyes. In all cases total blindness is treated as 100% disability entitling the workman to the full 62½% of average earnings. The scale for injury to one eye, however, is a varying percentage of that full compensation depending on the weekly wage. For lower wages, the percentage is higher. Where the wage is $9.00 to $18.00 a week, one blind eye entitles a man to 13.75% of full compensation; whereas, with a wage of $34.00 to $38.46 a week ($2,000.00 a year the maximum), the percentage is 11.78% of full compensation.

Disfigurement Allowance: Sub-section 3 of Section 53 provides that, in accidents after the 30th April, 1924, serious and permanent disfigurement about the head or face may be recognized as an impairment of earning capacity and be compensated for. From the 1st July 1921, when the lump sum payment was abolished, down to the 30th April 1924, this disfigurement compensation was inoperative and it was necessary to prove loss of

earnings. The statement was made to the Commission that the workers of the Province were promised that the amendment would be made retroactive; but this was not done; and certain individuals whose accident came within the period are without compensation and feel a grievance.

Temporary Total Disability: Section 54 deals with temporary total disability, the scale being the same as for permanent total disability, while the disability lasts.

Temporary Partial Disability: Section 55 deals with temporary partial disability and provides that, if the earnings are less than 90% of the earnings at the time of the accident, the compensation shall be 62½% of the difference; that is, the compensation is 62½% of the impairment of earnings provided such impairment be greater than 10%.

Average Weekly Earnings: Section 56 deals with the computation of compensation and it is in connection with this matter that by far the greatest number of complaints reached the Commission. The provisions are that, in computing the average weekly earnings, the Board may take any number of weeks during which the workman has been employed by his employer, previous to the happening of the accident, or, if this is impracticable by reason of the shortness of time or the casual nature of the employment, regard may be had to the average earnings "which are being earned by a person in the same grade of employment." There are a number of other complicated provisions dealing with concurrent contracts of service, special remuneration, etc.

Sub-section 5 states that compensation under the Act shall "not exceed the rate of $1,140.00 per annum." Sub-section 6 says that, for the purpose of ascertaining the amount of compensation payable under Sections 53 and 55, "average weekly earnings shall be computed in such a manner, as is best calculated to give the rate per week at which the workman was being remunerated, but not so as, in any case, to exceed $2,000.00 per annum." The above is the outline of the scheme set up for arriving at average weekly earnings; and it must be remembered that, under Section 13 (4 e), the Board is given exclusive jurisdiction in determining such earnings.

The Commission went quite fully into this matter with the Chairman of the Board and finds that, in practice, the actual earnings of the individual concerned are taken as the basis of the computation only after 3 months of continuous employment. The employer is asked to make a return of the earnings of the man in his employ for the full year before the accident; but, as stated above, this return is only used if it shows 3 months' continuous employment. The Board may also take into account unavoidable causes of absence from work such as sickness, deducting the period and averaging the remainder of the year. If a strike intervenes, they take the end of the strike as the beginning of employment and apply the three months' rule. If a mine were shut down for three or four months, a fresh start

would also be made. If, then, the employment at that mine has lasted more than three months, the earnings for a full year at the mine are divided by 52 and taken as the average weekly earnings for the computation of the compensation. The Chairman stated that the Board has sometimes given effect to income from other employment within the year; but there seems to be no regular rule as to this.

For all cases injured after less than three months' continuous employment, as defined in the last paragraph, the Board makes use of average earnings computed in the following way. Careful record has been kept by districts and by occupations of the earnings reported in connection with claims for compensation. An average for each occupation is struck and this average is revised to take account of each fresh case. Whenever the wage scale is revised either up or down, the average figure for earnings to that date is amended in proportion and the fresh figures added and averaged as before. A minor difficulty in this method seems to be that the average earnings, thus arrived at, are the average of the earnings of those workmen who have been injured. How closely this corresponds with the average of all workmen of the same grade of employment must be a matter of conjecture. Another minor difficulty is that it is, necessarily, the average of the earnings of only those workmen who have been continuously employed for more than three months. This may have a more serious effect on the result. For example, with the irregular operation of Alberta mines, the workman who stays with mining the year round will have a much lower general average of weekly earnings from mining than obtains for the six or eight months of real activity in the mines. Is it the intention of the Act that a workman, compelled by accident to lose a month or two of the busy season, should be compensated on a basis calculated by including the slack time? As quoted above, the Act says "average weekly earnings shall be computed in such a manner as is best calculated to give the rate per week at which the workman *was being remunerated*," presumably at the time of the accident.

The major difficulty, however, seems to arise from the way in which the Board has been applying its own method of average. The maximum compensation is $21.84 a week. This is equivalent to 62½% of $34.94 a week. In order to entitle an individual to the maximum compensation it is, therefore, only necessary to know that his average earnings have been $34.94 a week or more; that is, earnings over that figure may be disregarded. But it is a very different matter to omit these excess earnings from the calculation of averages. To give a simple illustration:

If injured workman	A.	averaged	$50.00 a week,
" "	B.	"	40.00 " "
" "	C.	"	30.00 " "
" "	D.	"	20.00 " "
the general average of the four would be			35.00 " "

and any other workman coming in for compensation based on that average would get the maximum of $21.84 a week. But for the

purposes of their own compensation, A. and B. are entered up at only $34.94 a week the amount required to give them the maximum and according to the information given to the Commission by the officials of the Board, the *same figure is used in the average* with the following result:

A.	$34.94
B.	34.94
C.	30.00
D.	20.00
	$119.88 Average $29.97

which average of $29.97 at 62½% would give other workmen $18.73 a week compensation instead of the $21.84.

There are, undoubtedly, great difficulties in arriving accurately at the earnings, at any particular moment, of "a person in the same grade of employment"; but the above method of calculation and, especially, the omission from the average of all that part of the earnings in excess of $34.94 a week or $1,824.00 per annum hardly seems to this Commission to carry out the intention of computing the average weekly earnings "in such a manner as is best calculated to give the rate per week at which the workman was being remunerated." At least, it is no wonder that the various witnesses who appeared before the Commission found it impossible to understand the calculation of the Board or to make it agree with their own idea of the compensation they should be receiving.

The result is a great amount of dissatisfaction, not so much with the Act itself or even with the scale of compensation, but with the mere detail of calculation under it. The workmen in a seasonal district, such as Drumheller, complain that to average 5 or 6 months' wages over 52 weeks results in them getting at most 40%, instead of the 62½% to which they think they are entitled; because they are able to earn something on the outside, which they think should be taken into account. On the other hand, of course, to take a very short period as the basis of the average would expose the system to the accidents of a highly irregular employment. If the week immediately preceding the accident were taken as the basis, an injured workman in one mine might have full time while his brother in another mine had worked but one day in that week. Some system of averaging is, therefore, necessary to a percentage scale of compensation. Altogether, the dissatisfaction with this calculation and the difficulty of remedying it form strong arguments for the flat rate basis, which will be discussed later in this chapter.

Maximum Compensation: Sub-section 5 of Section 56 fixes the maximum at $1,140.00 per annum. A comparison of this maximum with the practice elsewhere will be given below. It may be mentioned, however, that this maximum is not 62½% of the $2,000.00 fixed as the maximum earnings, which it might logically be supposed to be. In the 1921 Act the maximum was $1,100.00, being 55% of $2,000.00.

Minimum Compensation: Section 57 fixes the minimum for temporary or permanent total disability at $10.00 per week or the actual earnings, if those earnings are less than $10.00 per week. Sub-section 3 states that the Board may, in its discretion, agree with the workmen and employers or their representatives as to the average wage earned by the workmen and take it as the average earnings. Perhaps this would be a better method and cause less dispute than the one above described. An interesting provision of this section is that, if the workman at date of accident is under 21, the Board may take into consideration the possibility of his wages increasing.

Medical Aid: Section 60 deals with medical aid and states that all plans for such aid must have the approval of the Board. The amount called for by an approved plan or fixed by the Board itself shall be deducted by the employer from the wages of the workmen. The general deduction for medical aid is 4c a day and the Board pays the doctor so much for each visit. In the Crowsnest Pass camps, the doctor is paid a general retainer of $2.50 a month which covers all medical attention to the workman's family and also the care of the workman himself during accidents; but from this is deducted ¾c per workman per day, which is paid to the Workmen's Compensation Board to take care of accident cases attended to by specialists.

Industrial Diseases: By Section 62 industrial diseases due to the nature of the employment are to be treated like accidents for the purposes of compensation. The diseases which are to be so treated are scheduled to the Act. Requests have been made to have rheumatism included. This hardly seems practicable considering the prevalence of that complaint, the apparent multiplicity of the ways in which it can be contracted and the difficulty of diagnosis; although there are undoubtedly bona fide cases where serious disability from rheumatism arises out of the conditions of employment.

Notice of Accidents: Section 65 requires notice of accidents to be sent by the employer within 24 hours and by the doctor within five days from the date of his first attendance. The complaints as to tardiness in payment seem, in many cases at least, to be due to delay in the forwarding of these reports; and the statement was freely made that the doctors are the chief offenders in this respect. The time allowed the doctor was formerly seven days and this was reduced to five days in an effort to minimize the delays from this cause.

Persons to Whom Act Applies: By Section 70 the Act does not apply to casual employment, railways (for most classes of workmen), agriculture and some minor classifications; but, under Section 16, application may be made to come under the Act; and such application has been made for certain of these excepted classes.

For those who are not familiar with the Act, it may be mentioned that Schedule 1, Classes 1 to 6, cover coal mining, coke making, briquetting and allied employments; Schedule 2 deals

with all other industrial employments divided into various classes; and Schedule 3 covers employees of the Dominion and Provincial Government. The relative importance of these schedules will appear from the following tabulation of the pay-rolls:

TABLE 119—*Province of Alberta pay-rolls as reported to the Compensation Board.*

Year	Schedule 1	Schedules 2 and 3	Total Pay-rolls
1919 No figures available.			
1920	$19,380,475.21	$37,939,779.35	$57,320,254.56
1921	15,970,871.58	44,220,752.46	60,191,624.04
1922	16,778,379.04	41,899,105.34	58,677,484.38
1923	18,109,457.81	44,179,887.02	62,289,344.83
1924	12,295,136.54	43,703,521.43	55,998,657.97

6. Regulations of the Workmen's Compensation Board

Accident Prevention Committee: Regulation No. 9, Sub-section 197 makes it compulsory, where ten or more workmen are employed, to have an Accident Prevention Committee of not less than two members; but, in the case of coal mining, this applies only to operations above ground. Presumably, this exception is made because of the provisions of the Mines Act regarding Mine Inspection Committees.

Demerit Ratings: Regulation No. 11 imposes a demerit rating, the general effect of which is that, if the outgoings on account of any employer exceed 105% of the assessment received, the assessment for the current year shall be increased, above the base rate, 1% for each 1% of such excess, with a maximum increase in rate of 30% of the base rate. By a proviso, however, the excess is not to be charged, where the total amount of outgoings does not exceed the total amount received from the employer by the 5%. In practice, the Department goes back to the beginning of 1918 for this aggregate comparison. This system was instituted on the 1st July 1924 and, for the remaining six months of that year, thirteen operators received the maximum demerit rating of 30%, making their rate 3.90% of the payroll instead of the usual 3%. The actual amount of additional revenue secured in this way was $3,076.95. For the year 1925, three coal companies were demerited, also the maximum, with an estimated additional revenue of $2,925.00. One of the demerited operators appeared before the Commission and expressed very forcibly his objection to the system. He thought it was a departure from the general principle of the Compensation Act, which was intended to spread the burden of accidents over the whole industry. His particular grievance, however, was that he did not know of anything he could do to escape. Other operators not on the list took the same view, that it was a penalty without a proved offence of any sort and could not make the operators any more anxious to eliminate accidents.

It appears that, in its inception, this demerit system was agreed to by the Western Canada Coal Operators' Association as an alternative to a general increase of rate above the 3%.

Nevertheless, the principle does not appear to this Commission to be a sound one. It seems more than doubtful whether the regulation, in its present form, is contemplated by Section 33 of the Act. Sub-section 2 of that section reads: "Where in the opinion of the Board sufficient precautions are not taken for the prevention of accidents to workmen in the employment of any employer or where the sanitary or health conditions are not proper the Board may add to the amount of any contribution to the Accident Fund . . . . such a percentage thereof as the Board may deem just." That is to say, an extra assessment is to be made for cause. There is no suggestion in the present demerit regulation of an antecedent opinion by the Board that sufficient precautions are not being taken; indeed, if there were cause for such an opinion, the remedy should be found in the enforcement of the Mines Act and Regulations or of the safety regulations of the Compensation Board. It should be noted that the demerit ratings, under a system of Employers' Liability Insurance, are based on inspections of the properties and the safety precautions taken.

The Commission agrees with the operator, quoted above, that the whole principle of compensation rating by classes is to spread the risk over an entire industry. In any case, the additional revenue from this source is quite insignificant compared with the sense of grievance created. If for cause which cannot otherwise be remedied, there would seem to be some justification for such a system; but, based as it is on mere luck in the occurrence of accidents or in the age or number of dependents of the injured workman, the Commission recommends that the demerit system be done away with.

7. Scale of Compensation

As pointed out by one of the witnesses, in 1908, in the case of a fatal accident, the dependents received a lump sum of not less than $1,000.00 and not more than $1,800.00; in 1918, the basis was changed to a monthly payment with the maximum increased to $2,500.00; in 1920, the maximum was removed; in 1922, the average amount necessary to be set aside in the case of say a widow and four children was $7,680.41, the average amount in all cases of dependency being $5,966.04. According to information furnished by the Board, the average cost in 1925 up to the 10th December for all fatal accident cases, exclusive of any compensation paid to the man himself before his death and exclusive of medical aid or funeral expenses, was $6,914.20. One fatal case showed a capitalized cost of $11,279.55; and the total payment to this widow, if she lives the full period of expectancy and remains unmarried, and to the children, if they live to be sixteen years old, will be $22,984.20. For permanent total disability, one of the 1925 cases requires the payment into the reserve of $16,169.00; and, if this workman lives the full period of expectancy, he will have received from the Board $33,766.80.

For lesser injuries the following are actual 1925 cases:

TABLE 120—*Compensation for certain injuries under present Act, compared with original Act.*

Disability	Capitalized Cost under Present Act	Amount Payable under Act 1918-20
Loss of leg at thigh	$8,175.75	$860.00
" " " above knee	7,236.96	860.00
" " " below "	5,514.95	625.00
" " foot	3,846.98	625.00

These figures fully substantiate the contention of witnesses that there has been a tremendous increase in the amount of compensation payable since the Act was first established. It was pointed out, however, that under the new Act common law damages are abolished. The scale under the 1918 Act and changes since are summed up in the following tabulation, supplied by the Workmen's Compensation Board:

TABLE 121—*Summary furnished by the Board of compensation provisions of Alberta Acts in the years shown.*

	1918	1919	1920	1921	1924
DEATH			(Increases to apply to existing cases)		
Maximum payment	$2,500.00	$2,500.00	No maximum of total payment	No maximum of total payment	No maximum of total payment
Pension—Widow	$20.00 a month (on remarriage a lump sum of $480 and pension ceases)	$20.00 a month (Same)	$30.00 a month (Same)	$35.00 a month (Same)	$35.00 a month (on remarriage a lump sum of $480, and pension ceases)
Children	$5.00 a month	$5.00 a month	$7.50 a month	$7.50 a month	All children under 16 years of age $12.00, $10.00, $9.00 and $8.00 per month
Maximum payment for widow and children	$40.00 a month	$40.00 a month	$60.00 a month	$65.00 a month	No maximum
Burial expenses	$75.00	$100.00	$100.00	$100.00	$100.00
Where only dependents are children, each child under 16	$10.00 a month	$10.00 a month	$10.00 a month	$12.50 a month	$15.00 a month
Maximum payment	$40.00 a month	$40.00 a month	$40.00 a month	$50.00 a month	No maximum
PERMANENT TOTAL DISABILITY					
Workman	$10.00 a week	$10.00 a week	$10.00 a week	55% of average earnings paid weekly, maximum $1,100 per year	62½% of average earnings paid weekly—maximum, $1,140 per year (=$21.84 per week maximum); minimum, $10 a week, or actual earnings if less than $10.
Workman with child	$12.00 a week	Max. $16.00 a week; $2.00 first dependent; $1.00 each additional	(Same)	Ditto	Ditto
Maximum payment	$2,500.00	$2,500.00	$2,500.00	No maximum	No maximum

TABLE 121—*Continued.*

	1918	1919	1920	1921	1924
PERMANENT PARTIAL DISABILITY					
Arm at or above elbow	$1,000.00				
Leg at or above knee	$860.00				
Loss of foot at or above ankle	$625.00	Same as 1918	Same as 1918	Based on Percentage of Disability and Average Earnings.	Based on Percentage of Disability and Average Earnings—62½% of difference between average before and after
Loss of hearing complete	$600.00				
Loss of sight of one eye	$550.00				
Loss of thumb	$150.00				
Loss of finger or great toe	$100.00				
Loss of toe other than great toe	$50.00				
TEMPORARY TOTAL DISABILITY					
Workman	$10.00 a week	$10.00 a week	(Same)	55% of average earnings	62½% of average earnings
With children	$12.00 a week	Max. $16.00 a week			
Minor	$7.50 a week	$7.50 a week			

TABLE 122—*Certain items in compensation schedules of coal producing states of U. S. A. compared with Alberta.*

State	Waiting Time	Death	Permanent Total Disability		
		% of Wages and Duration of Compensation	% of Wages and Duration of Compensation	Weekly	
				Max.	Min.
Pennsylvania . . .	10 days	15% to 60% (up to 300 weeks)	60% (up to 500 weeks, not over $5,000)	$12.00	$6.00 or actual
West Virginia . .	7 days	Monthly, widow $30 until death or remarriage; each child $5.00	66⅔% for life	$16.00	$5.00
Illinois	7 days (none if lasts 4 weeks)	50% to 60% until equal to 4 years' earnings (maximum $4,250)	50% to 65% for 8 years	$14.00 to $17.00	$7.50 to $10.50
Ohio	7 days	66⅔% for 8 years (maximum $18.75 a week; total $6,500)	66⅔% for life	$18.75	$5.00 or actual earnings
Kentucky	7 days	65% for 335 weeks (maximum $12 a week—$4,000)	65% for 8 years (Maximum $6,000)	$15.00	$5.00
Indiana	7 days	55% for 300 weeks (maximum $24 a week—$5,000)	55% for 500 weeks (Maximum $5,000)	$24.00	$10.00
Iowa	14 days	60% for 300 weeks (maximum $15 a week)	60% for 400 weeks	$15.00	$6.00
Colorado	10 days	50% for 6 years (maximum $12 a week—$3,750)	50% for life	$12.00	$5.00 or actual earnings
Wyoming	7 days (none if lasts 21 days)	Lump sum $2,000 to widow plus $120 a year each child (maximum $3,600)	Lump sum $4,000 plus $120 a year each child (Maximum $8,000)		

TABLE 122—*Continued*

State	Waiting Time	Death	Permanent Total Disability		
		% of Wages and Duration of Compensation	% of Wages and Duration of Compensation	Weekly	
				Max.	Min.
Washington	3 days	Monthly, widow $35 until death or remarriage; children $12.50, $7.50, $5.00	Monthly, married, $40; single, $35; children, $12.50, $7.50, $5.00		
Utah	3 days	60% for 5 years (maximum $16 a week —$5,000)	60% for 5 years, then 45% for life	$16.00	$7.00
Montana	14 days (none if lasts 6 weeks)	30% to 50% for 400 weeks (maximum $12.50 week)	50% for 400 weeks; thereafter $5 week for life	$12.50	$6.00 or actual earnings
North Dakota . . .	7 days (none if lasts 7 days)	Widow 35% till death or remarriage; each child 10% additional (maximum 66⅔%)	66⅔% for life	$20.00	$6.00
Province of Alberta	3 days (none if lasts 10 days)	Widow $35 a month till death or remarriage; on remarriage lump sum $480; children $12, $10, $9, $8 Average transfer to reserves in 1925—$6,914.20; greatest amount transferred to reserves in 1925—$11,279.55	62½% for life Maximum transfer to reserve in 1925—$16,169	$21.84	$10.00 or actual earnings

Comparison with U. S. A.: A comparison of the Workmen's Compensation laws in the United States, as of January 1, 1925, has recently been published by the U. S. Department of Labor. Assembling the information for the chief coal mining states, listed in order of their mining population, gives the foregoing tabulation, with the information for Alberta added for purposes of comparison (see pages 300 and 301).

This includes the information regarding all States in the union which are of any interest to the Alberta coal mining industry. From the comparison, it will be seen that Alberta's waiting time of only 3 days is equalled by Washington and Utah; but these states have no provision for cancelling the waiting time, if the disability lasts. The provision for cancellation exists in four of the states but, to secure it, the disability must last 6 weeks in Montana; 4 weeks in Illinois; 21 days in Wyoming; and in North Dakota only 7 days but there the waiting time itself is 7 days. It will thus be seen that Alberta has far more favorable provisions as to waiting time than any state in the union, with the possible exception of North Dakota.

The compensation to dependents in the case of death is, in most cases, limited to a certain period of weeks or a certain maximum sum of money and, except in the case of Washington and North Dakota, the total amount of maximum liability is very much less than in Alberta. For permanent total disability, those states that pay a percentage equal to Alberta's have fixed a lower maximum. West Virginia with 66 2-3% has a maximum of $16.00 a week against Alberta's 62½% and maximum of $21.84 per week. Ohio pays 66 2-3% with a maximum of $18.75 a week; North Dakota pays 66 2-3% and a maximum of $20.00; the other states pay lower percentages of the earnings or have limits in time or money to the total compensation. Wyoming is on a lump sum basis and Washington is on a monthly pension basis. In Wyoming, the maximum is $8,000.00 against the maximum in the 1925 Alberta case calling for a transfer to the reserve of $16,169.00. It should be noted that the maxima fixed in all these cases should really be compared with the total payment, if the workman lives to the full period of expectancy, which, as already stated, in the latter Alberta case would mean a total of $33,766.80. The pamphlet above quoted states that the tendency of all recent amendments of the American Acts has been towards reduction in the waiting time and towards increases in the benefits paid, either by raising the percentage or by raising the maxima or by both. Occupational disease is recognized in 12 of the 48 states, as it is in Alberta. The above comparison, however, will show that Alberta is far in advance of the great bulk of the compensation legislation in coal mining territories in the United States.

Comparison with other Provinces: A complete analysis of the Workmen's Compensation laws of the various provinces in Canada has just been compiled by T. J. Coughlin. Selecting the same information as given above for certain states in the Union, gives the following comparative tabulation of compensation laws in Canada:

TABLE 123—*Certain items in compensation schedules of other Canadian provinces compared with Alberta.*

Province	Waiting Time	Death	Permanent Total Disability		
		% of Wages and Duration of Compensation	% of Wages and Duration of Compensation	Weekly	
				Max.	Min.
Nova Scotia	7 days (none if lasts 7 days)	Monthly, widow $30 until death or remarriage; on remarriage lump sum of $720; each child $7.50 monthly (maximum for all $60 month)	55% for life	$12.32	$5.00 or actual earnings
New Brunswick .	7 days (none if lasts 7 days)	Monthly, widow $30 until death or remarriage; on remarriage lump sum of $500; each child $7.50 monthly (maximum for all 55% of average earnings)	55% for life	$15.82	$6.00
Quebec	7 days if temporary; none if permanent disability	4 years' wages not including overtime (maximum $3,000, minimum $1,500)	50% of wages up to $1,000 and 25% on next $500 (maximum $3,000)	$11.97	
Ontario	7 days (none if lasts 7 days)	Monthly, widow $40, also lump sum $100 until death or remarriage; on remarriage lump sum $960; each child $10 month; maximum for all 66⅔% of average earnings	66⅔% for life	$25.64	$12.50 or actual earnings
Manitoba	3 days	Monthly, widow $30 until death or remarriage; on remarriage lump sum $720; children $12, $10, $9, $8	66⅔% for life		$15.00
Saskatchewan . .	7 days (none if lasts 7 days)	$2,000 or 3 years' wages (maximum $2,500)	3 years' wages (maximum $2,500, minimum $2,000)		
British Columbia	3 days (none if lasts 14 days)	Monthly, widow $35 until death or remarriage; on remarriage lump sum of $480; each child $7.50	62½% for life	$23.94	$5.00 or actual earnings
Alberta	3 days (none if lasts 10 days)	Monthly, widow $35 until death or remarriage; on remarriage lump sum of $480; children $12, $10, $9, $8	62½% for life	$21.84	$10.00 or actual earnings

From this comparison, it appears that the waiting time in Alberta is as low as any in Canada. Manitoba also has 3 days; but there is no provision for starting compensation from the time of the accident, 3 days being taken off in each case. In B. C., which also has 3 days' waiting time, a disability must last 14 days to have compensation calculated from the date of the accident. In Alberta, this happens if the disability lasts 10 days. The monthly pension to a widow in Alberta is equal to that in B. C., less than that in Ontario and more than any other province. Alberta pays more for children than B. C. The percentage of wages paid for permanent total disability in Alberta is the same as in B. C. and is less than Ontario and Manitoba which both have 66 2-3% but more than any of the other provinces. The weekly maximum payment is less than B. C. and Ontario and more than Nova Scotia, New Brunswick and Quebec. Manitoba has no maximum. Quebec has a maximum of $3,000.00. Alberta's minimum of $10.00 a week or actual earnings is less than Ontario or Manitoba but is higher than Nova Scotia, New Brunswick or B. C.

8. Suggested Return to Flat Rate Basis

The difficulty which the workman experiences in understanding the calculation of average earnings and the general discontent with the amount of compensation received has led to a desire for a flat rate basis. It is true the change to a percentage basis was, in the first instance, made at the request of the men but many witnesses stated that it had not worked out at all in the way they expected. Accordingly the commission received a great number of requests for a return to the flat rate weekly allowance method of compensation similar to the original Act. To have the amount of the compensation vary with the number of dependents coincides with the theory of compensation, that it is to relieve the state of the care of an injured workman and his dependents and make the industry bear the cost. Many requests of this character have been received. Under a percentage basis, a man with high earnings, who might be expected to save money, receives more than the low paid worker, who certainly cannot do so, and the latter is just as apt to have a large number of dependents. In other words, the general basis would be fixed with a view to the number of people to be cared for and to the cost of living rather than to the rate of pay. It will be noted that one or two of the states have attempted to combine the principle of a percentage payment with variations for dependency in cases of permanent or partial disability. Most of the compensation in case of death takes cognizance in some form or other of the amount of dependency. In Alberta's case, the flat rate has been maintained for dependency. It would be more logical to have both disability and dependency on the same basis, either as percentage of wages or the flat rate.

One difficulty about a flat rate is the possible objection of the higher paid trades. Those in such trades, with steady

employment where no difficulty arises as to the ascertainment of average earnings, are probably pretty well satisfied with the Act as it stands. It is possible, therefore, that opposition to the change may be encountered in such quarters. This Commission, however, has only to deal with the coal mining industry. It appears, therefore, that, although the change to a percentage basis was made originally at the request of the workmen, they are now more than willing to revert to a flat rate basis. All of the operators with whom the matter was discussed expressed themselves in favor of such a change; although one operator took the view that having carried the percentage basis through a rising labor market it might be wise to continue it while wages were falling. That was only another way of saying that there might be a tendency to fix the flat rate at too high a level, if the change were made now. For all the reasons which appear in the above discussion, this Commission recommends strongly that the percentage basis of compensation be abandoned in favor of a flat rate. The exact rate to be struck and all the details will have to be a matter of special study by the Government in consultation with the industry.

9. Workmen's Compensation Board

It will be well to record certain general facts regarding the Workmen's Compensation Board as it concerns the coal mining industry. The results in a financial way to the end of 1924 are given by the following statement, supplied by the Board:

TABLE 124—*Workmen's Compensation Board general financial results of Schedule* 1—*Coal mining and allied employments.*

Year Ending—	Surplus	Expended in Mine Rescue Work
December 31, 1918	$54,984.78	
" " 1919	73,989.95	$13,558.20
" " 1920	182,642.99 (*a*)	37,978.70
" " 1921 (Deficit)	27,327.89 (*b*)	42,325.04
" " 1922 (Deficit)	108,609.38	45,559.00
" " 1923	37,211.72 (*c*)	17,108.42
" " 1924	5,000.36 (*d*)	19,359.10

(*a*) No estimate of liability for outstanding accidents and claims.

(*b*) Previous to 1921 no liability set up for fatal or permanent disability claims. Amount set aside 1921 was $272,330.46. Disaster reserve of $45,000 was also set up this year and credited back in 1922.

(*c*) Charges for mine rescue made in previous years totalling $139,420.94 were credited back to the schedule and from then on a proportion of assessments made were credited to mine rescue account, out of which expenses of mine rescue were paid, the balance being applied on mine rescue liability to accident fund.

(*d*) Disaster reserve of $24,000 set up this year.

The rate prevailing and the assessment revenue collected compared with the tonnage is given by the following as supplied by the Board:

TABLE 125—*Workmen's Compensation Board—Coal mining and allied employments, assessment rate and total collected, tonnage and assessment per ton.*

Year—	Net Rate	Total Assessment Revenue Collected During the Year	Coal Tonnage Produced Annually	Assessment Cost Per Ton
1919.....	1.50	$151,368.28	5,022,412 tons	3.01 cents
1920.....	1.50	188,774.31	6,908,923 "	2.73 "
1921.....	1.50	305,335.07	5,937,195 "	5.14 "
1922.....	2.25	293,063.08	5,976,432 "	4.90 "
1923.....	3.00	473,678.50	6,866,923 "	6.90 "
1924.....	3.00	346,315.99	5,203,712 "	6.06 "
		$1,758,535.23	35,915,598 tons	4.89 cents

The cost of administration, as compared with all collections (Schedules 1, 2 and 3), is given by the following supplied by the Board:

TABLE 126—*Workmen's Compensation Board—Total collections and administration expenses—All schedules.*

Year	Collections	Administration Expense	Percentage of Administration Expenses to Total Collections
1919.....	$355,555.18	$38,181.86	10.73%
1920.....	460,183.98	44,470.15	9.66%
1921.....	698,983.65	59,783.51	8.55%
1922.....	577,026.66	62,441.36	10.82%
1923.....	688,289.76	55,331.09	8.03%
1924.....	629,251.10	56,469.45	8.97%

10. Accidents in Alberta Mines

The total payroll, the number of accidents reported and the comparison of these with the payroll and with the number employed are given by the following table supplied by the Board:

TABLE 127—*Workmen's Compensation Board—Payroll, accidents, average numbers employed and comparisons—Schedule* 1 *only (coal mining and allied employments).*

Year	Payroll	No. of Accidents Reported	No. of Accidents Per $100 of Payroll	Avge. No. Employed	Accidents Per 1,000 Persons Employed
1919....		1605			
1920....	$19,380,475.21	2690	.0138	12,347	217
1921....	15,970,871.58	3375	.0211	8,685	388
1922....	16,778,379.04	3615	.0215	8,971	403
1923....	18,109,457.81	4323	.0238	10,758	401
1924....	12,295,136.54	2474	.0201	7,095	348

It should be stated that the figures for average number employed in the above table, as elsewhere in the compilations of the Workmen's Compensation Board, is an average number arrived at by compiling returns from operators. The question asked of the operators is the "usual number of men employed each month." These numbers added together and divided by 12 give the aver-

age figure used. The number of reported accidents per person employed calculated in the way above stated, gives a truly appalling percentage. It means that for 1922 and 1923 two out of every five workmen were injured and for 1924 more than one out of every three. The total number of men at risk, however, is much greater than the average number. For example, in 1924, as against an average given by the Compensation Board as 7,095, the men on the payroll above and below ground as at the 31st December is given by the Mines Report as 12,061.

There is a most remarkable difference between the number of accidents in the coal mines of Alberta as given by the Mines Branch Report and the report of the Workmen's Compensation Board respectively as the following table will show:

TABLE 128—*Accidents in Alberta coal mines according to Mines Reports and Workmen's Compensation Board Reports.*

	Mines Report				Workmen's Compensation Board Report			
						Permanent	Temporary	
Year	Fatal	Serious	Slight	Total	Death	Disability	Disability	Total
1906...	10	11	20	41				
1907...	19	18	68	105				
1908...	11	38	13	62				
1909...	9	42	18	69				
1910...	61	41	58	160				
1911...	7	32	45	84				
1912...	21	38	58	117				
1913...	28	60	83	171				
1914...	209	44	50	303				
1915...	18	33	33	84				
1916...	20	51	34	105				
1917...	24	62	39	125				
1918...	22	60	77	159	*5	7	931	943
1919...	21	56	54	131	22	15	1568	1605
1920...	29	53	38	120	33	33	2624	2690
1921...	21	64	25	110	29	11	3335	3375
1922...	35	38	35	108	36	25	3554	3615
1923...	22	44	10	76	24	35	4264	4323
1924...	21	42	40	103	23	17	2434	2474

* From August 1st only.

To take an extreme case from the above, in the year 1923, the Workmen's Compensation Board received 4,323 accident claims as compared with the 76 accidents listed by the Mines Report. With such a discrepancy in the records here, it is not possible to make a comparison with accident figures elsewhere. One reason for the discrepancy, of course, must be sought in the different basis of reporting. Under Section 45 of the Mines Act, a report must be made to the Minister and to the District Inspector where loss of life or serious personal injury occurs by any explosion, by electricity, by over-winding or by such other cause or means as may be designated. This leaves out the whole range of minor accidents occurring through other causes. An examination of the description of the accidents, however, would seem to indicate that they do not all come within the definition and some must be as slight as any included in the Workmen's Compensation re-

turns. The difference in the reporting basis, then, does not seem to furnish an adequate explanation of the discrepancy and it should be investigated by the two departments.

The Commission recommends that the double system of reporting be done away with and the records of the Workmen's Compensation Board be made to suffice for both. A full description of the accident is given to that Board and there is a place for suggestions as to how to avoid such accidents in the future. It would seem to serve all useful purposes if this single report of the accident were made available to the Mines Department.

Apparent Increase in Accidents: Several witnesses referred to the very great increase in accidents since the Compensation Act came into force, which they were at a loss to account for. They were sure the mines were as well run today as they had been. One witness remarked that, since the Government took over the compensation, there had been more accidents by far "either that or we see them more." It was suggested that accidents must now be reported, even though there is no lay-off, in order that the doctors might be paid for attending. In the old days, the doctor was paid so much and looked after the men's accidents. Other witnesses referred to this same matter saying that the doctor had every incentive to keep a man off work as he was paid by the visit. The process may be more or less unconscious; but the point was emphasized so much in the evidence before the Commission that it seems necessary to record the belief that, under present arrangements, there is a tendency to prolong the treatment. If, and to what extent, these are the causes of the great increase in the number of accidents reported and in the compensation claimed could only be proved by a very laborious investigation.

This brings up the general question of malingering on the part of the injured workmen. The temptation as to this in connection with the waiting period has already been referred to. There were many expressions of opinion that malingering does exist to some extent, especially when a mine is not working steadily or just prior to the expected seasonal shut-down. It was thought that, with the higher scale of compensation, there was a greater temptation to lay off a little extra time; but, when pressed for specific instances, all of these witnesses fell back on the statement that malingering was a very hard thing to prove.

As against these suggestions of malingering on the part of the men or leniency on the part of the doctors attending them, the Commission received quite a number of specific complaints from the men's side, that they had been reported fit for work too soon and cut off compensation. A common form of dispute arises over the question as to whether or not the accident is the cause of the disability. It should be mentioned that many of the men's complaints had to do with cases in the past, winding up with the fact that the matter had been or was being reviewed by the Board. Altogether, during the course of the hearings throughout the province and by correspondence since, nine specific cases were brought to the attention of the Commission. Each

of these has been investigated to the extent of examining the file at the office of the Board and getting the latest information about it. As already stated, many have already been adjusted. In other cases, there is a straight conflict of medical opinion. Having regard to the number of cases and the general difficulty of decisions, the number of complaints which reached the Commission may be considered remarkably small.

On the one hand, therefore, there were operators, recommending that there should be more care and caution in seeing that men got the compensation to which they were entitled, and no more, and that they were back to work, when they should be; on the other hand there were complaints by the men of undue severity in doing these very things. The general impression left on the Commission was that there was about the amount of criticism and counter-criticism, that might be expected to arise over decisions of the Board in a matter of such intricacy and difficulty.

To check the medical reports and medical accounts as well as to exercise general control of such matters, the Board has its own medical officer, with one assistant who travels about the country. To overcome the difficulty which is thought to arise from the local doctors being selected by the men in the first instance and paid by the visit, it has been suggested that the Board should have its own corps of accident doctors working on salary. While this is a development which may come in time for the whole province, such a scheme would only be feasible now in the more concentrated mining areas, such as the Crowsnest and Drumheller. Even there, it presents the difficulty of providing adequate medical attendance at scattered points for accidents which might happen contemporaneously. The Commission is forced to the conclusion, without wishing to reflect on the *bona fides* of the present medical officers engaged on this work, that accident doctors engaged by the Compensation Board on a full time basis would be in the interests of economy and recommends that a beginning be made by trying out this plan in suitable areas.

11. Suggested Provincial Health Service

A suggestion has been made and pressed with considerable force that the plan might go farther in order to centralize Government control of the entire health activities. The sums contributed by all the miners of the province for medical aid and for the mine doctor would make a total fund of considerable magnitude, one estimate being that it would provide something like $200,000.00 a year. The suggestion is that this be used to provide medical and hospital services throughout the province under central control. The difficulties are the widely scattered nature of the settlements, the intermingling in many places of the mining population with others, the complicated problems of administration involved and the general dislike of most people to be deprived of their independence in such matters. Attempts have, in the past, been made to centralize medical services and hos-

pital accommodation for certain concentrated mining areas; and these were discontinued because of the dissatisfaction of the mine workers themselves. Certainly, before attempting anything on a provincial scale, it should be tried out in the most favorable localities and allowed to develop naturally from that.

A suggestion was made by one operator that the workmen would feel more responsibility for the compensation scheme if they were to contribute premiums out of their wages, which in the first instance would be increased by an equivalent amount to make up to them for doing so. The idea was that, on the analogy of friendly societies, all would thus feel an interest in keeping down the expense; and that this might be the best corrective for any abuses that may have crept in. As a half way measure, it was suggested that perhaps the employer should contribute half the premium and the workmen the other half. No support for this suggestion was found in any other quarters and it is doubtful whether, even if adopted, it would have the desired effect.

12. Group Insurance

In the questionnaires, the operators and unions were asked to express their views on this subject. Such replies, as were received, indicated either very little knowledge of or very little interest in this form of insurance, as a supplement to or a substitute for the benefits under the Compensation Act. The men have become so accustomed to the contribution to this Act being made altogether by the operator that they would not be likely to favor any participating group insurance plan.

13. Mine Rescue Work

Mine rescue work was first established in the province of Alberta in the year 1912. When the explosion occurred in 1910 in the Bellevue mine, a mine rescue team from British Columbia came to assist in the recovery of the victims. One member of the British Columbia team lost his life in the performance of his duty. As a result of these events, there was an agitation to establish a mine rescue service in Alberta; and it was finally arranged to have the Government and mine operators jointly equip and maintain one mine rescue car. The service has increased from that time until there are now in operation four rescue cars and seven stations, with one hundred sets of breathing apparatus and all up to date requisites for mine rescue and first aid work. A system of training has been established and made a compulsory feature of the qualifications for the fire boss certificates. The Government issues certificates, following the course of training in mine rescue work, and there are now some fifteen hundred holders of such certificates in the province. The Workmen's Compensation Board took charge of the mine rescue work during 1918. That Board appoints the superintendents and pays the salaries and maintenance costs from the accident fund of this

particular class namely Schedule 1 Mining. The cost of this work for the four years 1921 to 1924 was as follows:

1921	$42,325.04
1922	45,559.00
1923	34,672.06
1924	22,681.00

Further details of this work will be found in the annual reports of the Workmen's Compensation Board.

C. OTHER ALBERTA ACTS

14. Alberta Coal Sales Act

The main purpose of the Alberta Coal Sales Act is to prevent the substitution of one coal for another, which, in the opinion of many witnesses, has in the past been a very disturbing factor in the market. The prevention of such substitution is very properly a matter for Government regulation; but it requires concerted action to make it effective. The Winnipeg by-law regarding the handling of coal has been discussed briefly in the chapter on Marketing (Chapter VI., Section 8). The Coal Sales Act, 1925, went into force on the 10th April, 1925. There was a previous Act in effect in 1923, which only provided for making regulations and which became inoperative in March 1924. Briefly, the present Act requires the operator of every mine to have a registered trade name for his coal, under which all coal from that mine shall be shipped and sold. Any advertisement must carry the registered trade name. All invoices, shipping bills and weigh tickets must show the registered trade name of the coal, the name and post office address of the mine, the coal area in which it is situated and the size of the coal. A dealer, selling coal produced outside the province, must similarly show the place of origin, name and address of mine, name of coal (if any) and the size of the coal. The Act further provides that every dealer whether wholesale or retail, selling coal produced in Alberta, shall keep a record in his office of the amount of coal purchased by him from every mine in Alberta or from places outside Alberta and the amount of the sales of coal so purchased. This record is to be classified under the registered trade name of the coal, if any, and shall show the size of the coal and the persons to whom the sales are made. This record is to be open to inspection by the Inspectors appointed under the provisions of the Act. An Inspector at the point of shipment is given power to examine the documents and the coal "and, if such coal does not conform with the information contained in any such document or it contains an excess amount of slack or other impurities, he may stamp a statement to that effect upon the face of any such document." The Inspector also has power to examine the documents and coal, in the hands of either dealer or consumer, to see whether the coal conforms with the information on the documents or whether the documents bear the stamped statement of any Inspector; and if the coal does not conform he may immediately take possession

of the documents. Anyone infringing the Act is made liable upon summary conviction to a fine up to $500.00 or imprisonment up to 6 months or both and an officer of a Corporation is made personally liable for the penalties. The Lieutenant Governor in Council is given power to add to or subtract from the number of coal areas, to appoint Inspectors for the purpose of the Act, to classify and grade coal, to prescribe fees and to make such regulations as may be necessary or convenient to ensure the sale and shipment of coal in accordance with the Act. A schedule is given of the coal areas into which the province is divided by the Act and which correspond with the coal areas given earlier in this report.

One witness before the Commission was disposed to criticize the division which, in the instance he was referring to, had the effect of combining in the one area two districts, which had formerly been kept distinct from a marketing point of view. However, as stated in Chapter I., these areas have been determined on scientific data and should serve the purpose for which they are intended, namely, to make it possible to distinguish clearly between different grades of coal and prevent substitution. Inspectors have been appointed and trade names registered. So far there have been no prosecutions under the Act; and it is too soon to judge of its effect on the problem it was designed to solve. If the provisions of the Act are not sufficient to set up standard sizes as recommended in Chapter VI., Section 15, the necessary amendment should be made. It is, perhaps, a question whether the powers to classify and grade coal would be held to include the power to establish standard sizes for it.

15. Alberta Mine Owners' Tax Act

The Mine Owners' Tax Act, of 1918, imposed a tax of 5c. a ton. At the session of 1922, an amendment was passed raising the tax to 10c. per ton. The operators, however, considered this too heavy an impost and, on legal advice, proposed to contest the validity of the Act in the Courts. They stated that they were willing to continue to pay the 5c. a ton and to do so from the date at which they had ceased to pay under the first Act. This proposal was accepted informally by the Government. The negotiations in the matter were with the Western Canada Coal Operators' Association; but that Association persuaded a number of outside Companies, not members of the Association, to pay the 5c. tax. This action on the part of the Companies was, presumably, not altogether altruistic but, rather, proceeded from the desire to settle the matter amicably and not invite a legal contest, with the possibility of amending legislation which might be made retroactive. Finally, the Mine Owners' Tax Act, 1923, was passed at the session of that year. This Act repealed the former Act as amended and substituted a tax on gross revenue, retroactive from the 31st May, 1918, the tax to be not more than 2% of the gross revenue and the precise tax to be fixed by the Lieutenant Governor in Council. The Order in Council under this Act was passed on the 14th August, 1925, and fixed the tax

at the maximum of 2% of the gross revenue. The actual tax collected, however, has been and, in general, still is calculated at 5c. a ton; although, to comply with the provisions of the above Order in Council, the Government is now asking from each mine a statement of the gross revenue. Where 2% of this revenue comes to less than 5c. a ton, the Commission understands that a few of the mines are paying the lesser sum. Recently the province sued one colliery for payment of taxes and judgment was given in favor of the province holding that the tax imposed was direct taxation and therefore within the power of the province. According to newspaper reports, at the time, this judgment has been appealed.

16. Alberta Public Health Act

In the course of their work, the Inspectors of Mines throughout the province are asked to report in duplicate on the housing accommodation, sanitary conditions, water supply, etc., and, in particular, are asked to say whether or not a visit from a Sanitary Inspector is necessary. One copy of this report is kept in the Mines Branch and the other copy goes to the Sanitary Engineering Branch of the Department of Public Health. While probably designed in the interests of economy, this system of having the Mines Inspector responsible for sanitary and health reports, at least in the first instance, does not seem likely to secure the best results. The Mines Inspectors may not be experts in health matters and, in any case, they have a full enough range of duties to see that the provisions of the Mines Act are carried out. The chief difficulty is the division of responsibility and the Commission thinks that sanitary inspections should be made by the Health Department. As stated under Living and Housing Conditions in the chapter on Mine Workmen, the Commission secured a special report from the Health Department on every mining settlement in the province. (See Appendix VII., not printed). The machinery thus exists for supervision of health matters but, as stated in detail in the chapter referred to, the Commission is of opinion that it is time a much higher standard was set and enforced in this regard.

D. OTHER PROVINCIAL ACTIVITIES

17. The Scientific and Industrial Research Council

This body originated in the autumn of 1919, as a committee appointed by the Provincial Secretary to advise him on matters relating to industrial research. By Order in Council dated January 6th, 1921, it was given definite status as The Scientific and Industrial Research Council of Alberta, consisting of 5 members, with power to direct research work, to engage assistants and to arrange with the University of Alberta for the necessary laboratory and other facilities and for the services of members of the University staff, as required. At present, the Minister of Public Works of the province is chairman and the other members are

the President of the University, the Professors of Geology, of Physics and of Mining and the Chief Mines Inspector. There is an Honorary Secretary who is also the Chief Chemical Engineer of the Council, together with a staff of part time or whole time assistants. The Council is supported by a direct grant of provincial funds, the cost to the province for the year 1924 being given in the public accounts as $52,346.68. Alberta was the first province to establish such an organization.

The work of the Council to date can best be seen in its reports, of which the latest is Number 14. After summarizing the information as to the general mineral resources of the province, these reports deal chiefly with coal and contain an amount of valuable information. In addition to the work on coal, the next most important activity is in connection with road materials and construction, which naturally is not the concern of this Commission. As has been already acknowledged, the account of the geology and characteristics of Alberta coal and much other information contained in this report is derived from the work of the Research Council. The members of the Commission paid a very interesting visit to the Research Laboratories and had several discussions with various members of the Council. It is quite unnecessary to go into details because the reports of the Council are available to all who are interested but a summary of its plan for work on coal was given to the Commission as follows:

(1) To continue the work on the geology of Alberta coal occurrences, paying particular attention to the younger formations. It has been arranged that the Dominion Geological Survey shall look after the Kootenay coals and the coals within the mountains, while the provincial organization specializes on the Belly River and Edmonton series.

(2) To investigate thoroughly the chemical and physical properties of Alberta coal with a view to intelligent use and extension of markets. The work on mine samples will be referred to a little later. The work in contemplation includes the sampling and analysis of the coal as it moves in commerce.

(3) To conduct laboratory experiments in briquetting. This work was started in 1921, when there was considerable wastage of the fine coals. In particular, a meeting in Edson in 1921 asked that something should be done towards briquetting the sub-bituminous fines of the Alberta Coal Branch. These briquetting experiments have been referred to under Methods of Use in the chapter on Marketing (Chapter VI., Section 33).

(4) To test mine timber. Extensive tests are being carried on to ascertain the properties and life under various conditions of locally available timber. Such work has been done by the Forest Products Laboratories of Canada in the East and by the U. S. Bureau of Mines; but this is not thought to be a duplication because of the differences in local timber and local conditions.

(5) To test house heating furnaces with a view to the designing of a proper type for various Alberta coals. At the outset, this work raised many new problems connected with the proper recording of the results; but those engaged in it consider that these initial difficulties have been solved and that they are now in a position to conduct valid tests of furnaces or of fuel.

(6) To conduct boiler tests giving results as to relative values of Alberta coal and also to suggest points of boiler design.

(7) To follow carefully what is being done in other countries to see what practical application may be made of any discovery for the benefit of the coal industry of Alberta. The Council feels it their especial responsibility not to allow any new work anywhere in the world to go unnoticed, both from the point of view of keeping abreast of the times and from the point of view of avoiding repetition, except insofar as may be necessary to secure the application of the results under local conditions.

One of the things which the Council is leaving in abeyance, at least for the present, is work on the carbonization of coal either by the low temperature or high temperature method. Some work was done on this and facilities exist for it but for the reasons given in the chapter on Marketing (Chapter VI., Section 32), this work has been discontinued for the present.

It is necessary to record that there exists, in the minds of at least some of the coal operators of the province, a considerable amount of skepticism regarding the value to the industry of the work of the Research Council. One critic took the ground that the work was largely a duplication of what had been done or was being done elsewhere. Undoubtedly, it requires constant care to minimize such duplication; but the Commission found the members of the Council fully aware of this point. Reference has just been made to the co-operation with the Dominion Government in the matter of Geological Survey and to the care exercised in following what was being done all over the world in connection with similar research. That this danger is not confined to Alberta appears from an article quoted to the Commission, taken from an American technical journal, which said in part: "It is good to know that what we ascertain the British will not concurrently be at pains to rediscover and what the British learn we shall not be compelled to determine over again by costly experiment. France, Belgium and let us hope Germany will soon join in and we shall have all nations combining to meet the common problems."

But the lack of appreciation goes deeper than this and has, unfortunately, been fostered by what can only be described as unwise expressions used in public by certain members of both bodies. There are also certain inherent difficulties in such a situation. Until the Research Council proves itself by achieving results of immediate practical importance, the operators of the

province can hardly be expected to bring to it their problems for solution but, unless the current problems are thus presented and there is frank and continuous discussion between the parties, how are first things to be done first and results achieved that are of immediate moment? Strong criticism, for example, has been expressed regarding the latest publication of the Council, namely the analyses of Alberta coals based on *mine samples*. The precise relation between these and the quality of the coal as it moves in commerce must remain a matter for individual determination. The whole object of preparation before shipment is to improve on nature; and the thing of importance to the consumer is not average analysis at the coal face but the average analysis of the coal when he comes to use it. Granted that such analyses give useful knowledge to the operators, there is some question as to the advantage in publishing results, which may or may not coincide with the commercial product and any unfavorable features of which are bound to be used by competitors in the market.

There can, however, be no dispute on the fundamental need of scientific research in modern industry. The British Prime Minister, in a recent speech in the House of Commons on unemployment, said, in part: "No one will assert that British industry can be saved by science alone; but it is none the less true that, until scientific methods and scientific men can take their place in industry and an equal place with the administrator and the financier, British trade will never be strong enough or resilient enough to meet the shocks that it is bound to meet as the years go by or to meet the sudden and unexpected changes, which will always arise in international trade." The Scientific and Industrial Research Council of Alberta is in existence and, in the opinion of this Commission, can do valuable work for the coal industry of the province. For the best results there must be a fuller measure of mutual confidence and co-operation and the hope of finding a way to secure these is one of the reasons for recommending the appointment of the Coal Industry Advisory Council of Alberta (see Section 26 of this chapter). That Advisory Council, through the Government members on the Research Council should be able to establish and maintain much closer touch between the Research Council and the industry.

18. Alberta Trade Commissioner's Office

The work of this office has been given full recognition in dealing with the Manitoba and Ontario markets. Like all other Governmental activities in relation to the coal industry, co-ordination and control will be secured by setting up a Department of Mines with an Advisory Council, as recommended at the end of this chapter. The work of the Trade Commissioner, so far as it concerns coal, would be carried on under the direction of that Department.

19. Alberta Labor Commissioner

In Chapter VII. on Labor Relations, acknowledgement has been made of the information furnished to this Commission by

the Labor Commissioner of the province. A Department of Mines with an Advisory Council should secure co-ordination of effort between that department and the Labor Commissioner's office and, for example, prevent overlapping in the gathering of statistics. Owing to the surplus of men seeking work in the mines, the Labor Bureaus of the province have not, in the past been called on to any extent for a supply of mine workmen; but this may not always be the case. The suggestion made in Section 48 of Chapter VII. assigns a definite and important place to the Labor Commissioner in superintending an orderly migration of mine workers.

E. DOMINION GOVERNMENT IN RELATION TO ALBERTA COAL

20. Mining Regulations

According to information furnished by the Mining Lands Branch of the Department of the Interior, coal mining rights in the province of Alberta, belonging to the Dominion Government, were disposed of under sale up to the year 1907. By Order in Council dated 9th May, 1907, regulations were established for the leasing of such rights; and these regulations were subsequently amended from time to time. Issues of the "Coal Mining Regulations" embodying these successive changes have appeared at intervals, a full set of them, as furnished by the Department, being as follows:

1. Order in Council 9th May, 1907.
2. Order in Council 16th February, 1909.
3. Order in Council 20th April, 1910.
4. Order in Council 25th May, 1910 (further amendments 12th August, 1911, 6th February, 1913, and 7th April, 1913).
5. Order in Council 26th January, 1915, 16th March, 1918, and 21st September, 1918.
6. Reprint in 1921 as amended by Orders in Council not quoted.
7. Reprint in 1922 as amended by Orders in Council not quoted.

By Order in Council dated 9th February, 1897, regulations were established for the issue of permits to mine coal for domestic purposes. These regulations were rescinded by Order in Council dated 18th February, 1920, and new regulations were established by Order in Council dated 11th March, 1921.

The form of tenure of coal rights, enjoyed by any person obtaining those rights from the Dominion Government, is therefore, dependent on the particular regulations in force at the time when the rights were acquired. The main classifications of such tenure are, as given in Chapter III.; freehold without royalty; freehold with royalty of 7c. a ton; leasehold with royalty of 5c. a ton and an annual rental of $1.00 an acre; but the minor

variations will be as numerous as the changes made by Order in Council. Attached to this Report as Appendix X (not printed), is a full set of the Dominion Government regulations for coal mining leases and coal permits.

Very briefly in their latest form, the coal mining regulations of the Dominion Government provide for leasing coal rights at an annual rental of $1.00 an acre, payable yearly in advance, the term of the lease to be for twenty-one years, "renewable for a further term of twenty-one years, provided the lessee furnishes evidence satisfactory to the Minister to show that, during the term of the lease, he has complied fully with the conditions of such lease and with the provisions of the regulations, regarding the disposal and operation of coal mining rights, which may have been made from time to time by the Governor in Council; and subject to renewal for additional periods of twenty-one years, on such terms and conditions as may be prescribed by the Governor in Council." The maximum area of a coal mining location is 2,560 acres; and no person is permitted to acquire more than one location, except by assignment. The rights in a lease may not be assigned, transferred or sub-let without the consent in writing of the Minister. The regulations contain full directions for making applications and deal with priorities, surveys, etc.

By Section 10, the lessee is required to "commence active operations on his leasehold, within one year from the date upon which he may be notified by the proper officer of the Department of the Interior to do so, and shall produce from such operations the quantity of coal specified in the said notification"; but the maximum required from a mine shall not exceed ten tons per annum for each acre leased. Default in the observance of this stipulation renders the lease liable to cancellation in the discretion of the Minister. By Section 11, "the lessee shall not assign, transfer or sub-let the rights, described in his lease, or any part thereof, without the consent in writing of the Minister being first had and obtained." If the annual rental in advance is not paid within thirty days of the due date, the lease is subject to cancellation in the discretion of the Minister; but, by Order in Council of the 18th January, 1923, the person in default may, at any time, by tendering the full arrears of rental with interest be reinstated in the rights he formerly had to the location or any portion thereof, which may still be available. In addition to the rental, a royalty of 5c. a ton of two thousand pounds of the merchantable output is payable monthly and sworn returns are to be made monthly. Default in the payment of royalty or not furnishing the returns may be followed by cancellation or the imposition of a fine, in the discretion of the Minister. There are certain provisions for expenditures on development in lieu of rentals.

An important section (which appears first in the 1918 regulations) requires the lessee, before opening any mine, to submit plans and specifications, which must first be approved by the proper officer of the Department before work commences. "The procedure to be adopted in opening up and operating a mine on

the lands leased, as well as the particular seam of coal which shall first be operated, shall, at all times be in accordance with the provisions of regulations duly approved by the Minister"; otherwise the lease is subject to cancellation, in the discretion of the Minister. Since the 1921 edition, the lessee has been required to pay school taxes and since 1918, whenever by reason of his mining operations he creates a centre of population, he has been required to provide a suitable site and to erect and maintain a school house for the accommodation of all persons of school age. There are certain special regulations where the lease is situated within forest reserves or park areas. There are, also, full provissions for acquiring the necessary surface rights. In their present form, then, the Dominion Government leases give control over the mining operations in a way that was not the case in the earlier leases.

The present regulations for the issue of permits to mine coal may be summarized as follows: The annual rental for a permit is $5.00 payable in advance. The maximum area to be acquired is one acre; and no person can hold more than one permit at the same time. None of the coal mined under the permit is to be sold. In addition to the rent, there is a royalty of twenty-five cents per ton of two thousand pounds. All operations for the recovery of coal under a permit are to be in accordance with instructions given by the Inspecting Engineer of Mines.

According to Chapter II., dealing with coal reserves, and as discussed in Chapter IX., on over-development, very substantial holdings of coal lands have passed from the control of the Dominion Government to that of operating companies or other parties. If, as seems probable, the province is about to acquire control of its natural resources, including the coal rights, it will of course do so subject to all existing leases. For reasons that are fully discussed elsewhere in this report, very few new leases will probably be or should be granted in the near future. Indeed, it would be a very wise thing, in the opinion of this Commission, if all general regulations for the leasing of coal lands were immediately suspended; so that, pending the transfer to the province and thereafter until the province can formulate its definite policy, any applications for such leases would become a matter of direct individual action by Order in Council.

Whatever may be done about this, it is clear that the opportunity to effect any desired changes in the form of tenure will not arise, in a practical way, until present leases begin to expire. It will be seen by the above account of the mining regulations that the earlier leases were subject to almost automatic renewal. By 1910, however, to secure a renewal, the lessee had to prove that he had complied fully "with the provisions of regulations regarding the disposal and operation of coal mining rights which may have been made, from time to time, by the Governor in Council." This very wise addition would seem to have the effect of making holders of all leases granted since 1910, conform to the revised regulations, if they wish to secure renewal. The exact nature of the problem will only appear after

a study is made of all existing leases, in the way suggested in Chapter IX. Meantime, two general principles are recommended for adoption: first, that all new leases should be made to run for periods, which will bring them up for renewal at the same time as existing leases, or, what would be equivalent to the same thing, the conditions of new leases should be made subject to revision, at such dates as will fit in with other expiries. The second general principle is that, in the meantime, these new leases must, of necessity, follow the general lines of the existing leases to enable their holders to compete.

Incidentally, the Commission would recommend that the Order in Council, dated 18th January, 1923, which provides for "reinstatement in the rights which he formerly had to such lease" be amended to provide that, if a lease be again granted to a former lessee, it be subject to the modifications in leases made in the meantime. In the Bibliography at the end of this report, will be found a collection of the coal mining and leasing regulations of other countries. These were secured with the intention of making a comparative study, with a view to the possibility of suggesting changes in the form of lease. In the light of the foregoing discussion as to existing leases, it is clear that any such attempt would be premature. Before anything can be done on a large scale to effect any changes that may on investigation seem desirable, there will be ample time to study the best practice elsewhere; and this should be done according to the latest developments in such practice.

All the general recommendations, made in this chapter and elsewhere in the report, with regard to the treatment of coal rights and the conservation of the coal deposits, may be regarded as addressed to the Provincial Government, on the assumption that the transfer to the Province of its natural resources will be consummated in the near future, or, in the alternative, as something which the Provincial Government should urge on the attention of the Government at Ottawa.

21. The Industrial Disputes Investigation Act

This Act of the Dominion Parliament has very great interest for the coal industry of Alberta and is discussed in Chapter VII on Labor Relations.

22. Customs Duty on Coal

A change in the tariff was announced in March, 1925, by which previous duties of fourteen cents a ton on slack coal and fifty-three cents a ton on other bituminous coal were changed to a flat rate duty of fifty cents a ton on all American bituminous coal. This stopped the practice, which had been carried on to some degree in the ordinary coal trade, of shipping separately the slack and screened coal and mixing again to make mine run. The reduction of the duty from fifty-three cents to fifty cents was to that extent a disadvantage to the Alberta producer and was, also, a direct loss of revenue to the Dominion Government, at least as far as the Western market is concerned, because the

great bulk of the bituminous coal imported into Western Canada was paying the full duty of fifty-three cents a ton. An increased duty on bituminous coal and a duty on coke and anthracite would be of great benefit in broadening the market for Alberta coal. Customs tariffs apply to the country as a whole and consideration must be given to varying interests in different parts of the country. Those interests can be relied on to present their side of the case. From the point of view of the Alberta coal industry, the Government of this Province can well urge on the Government of Canada customs measures, in the first instance at least, to the extent necessary to assure to the mines of Alberta and Saskatchewan the entire market in the three prairie Provinces.

23. Anti-Dumping Provisions

Reference has been made, particularly under the Manitoba market, to the numerous complaints lodged with this Commission regarding the Canadian anti-dumping provisions. The complaints applied both to coal and to coke. An instance was given of a contract taken at a price which, when worked back to the mine, meant a price there of about forty-five cents a ton. The opinion of witnesses was that the exporters of coal and coke, when it suited their purpose to do so, established a price by a very small amount of business in their home market. One case was referred to where, to meet a particular competitive condition, a cut had been made in the price, which was held to justify the exporter in shipping all his tonnage to Winnipeg at the cut price. The American business that established the price was said to be not more than two per cent. of the total business. In fact, one witness stated that a mine with an output of two million tons could sell five hundred tons at a low price "just to beat the anti-dumping clause." Many witnesses, who had suffered under this practice for years, came to the conclusion that what was required was to have our dumping provisions equivalent to the American both in legislation and in enforcement.

The Commission secured copies of the dumping provisions in the Acts and regulations of both countries but did not have the advantage of examining officials with regard to them. Replying to an enquiry on the subject, the Department at Ottawa wrote in part as follows:

> "You are advised that the Department always requires appraisal on the basis of representative sales for home consumption at the time and place of direct exportation to Canada. In other words the appraised value must be representative of all transactions as of the date of exportation and at the place of exportation . . . . The Department is not aware of any cases of appraisal at less than the fair market value of the article as sold for home consumption as above."

Judging from this reply from the Department and by the printed copies of the regulations, as compared with the American regulations, the following appears to be the position:

The Canadian dumping clause is based on the market value at the place of exportation and on the day of exportation. Only

the business of that day and place come into consideration and, on the accident of a small sale to meet competition in the home market or possibly by design, as was suggested by some of the witnesses, the stipulation may become quite meaningless. The American provision is very different. Section 205 of the United States Anti-dumping Act reads in part as follows:

> "The foreign market value of imported merchandise shall be the price. . . . at which such or similar merchandise is sold or freely offered for sale to all purchasers in the principal markets of the country from which exported . . . . . In the ascertainment of foreign market value for the purposes of this title no pretended sale or offer for sale and no sale or offer for sale intended to establish a fictitious market shall be taken into account."

Where, as must often be the case, it proves impracticable to establish a price "to all purchasers in the principal markets" recourse is had to the cost of production. It is specifically provided in this connection by the United States law that, in addition to all the usual items that would constitute such a cost, there must be added for general expenses not less than ten per cent of the cost and a further amount for profit of not less than eight per cent. All the provisions of the American Act are most detailed and explicit; and there is a special "Anti-dumping Unit," charged with the enforcement of these provisions. Even if dumping be established under the Canadian Act, the special duty to be imposed must not exceed fifteen per cent *ad valorem*. No such limitation appears to exist in the American regulations, the special dumping duty being the amount of the difference between the purchase price and the foreign market value or cost of production as defined above.

As far then as this Commission can judge on the facts before it, the contention of the various witnesses is amply borne out by the difference in the regulations. It is recommended most strongly that the Provincial Government should urge on the Dominion Government the necessity for an immediate and thorough investigation into this whole matter of the dumping of American coal and coke, particularly into the Winnipeg market.

24. Dominion Subsidy

A Dominion Government subsidy to assist in the transportation of coal, both from the east and the west, has been fully dealt with in connection with the Ontario market (Chapter VI.)

F. GENERAL RECOMMENDATIONS FOR PROVINCIAL GOVERNMENT ACTION.

25. Department of Mines of the Province of Alberta

Arising out of the discussion of the various problems, as contained in the whole of this report, and to provide the necessary machinery to carry into effect the suggestions made, the Com-

mission recommends the establishment of a Department of Mines of Alberta. As this recommendation, if approved, is one that should be acted on promptly the Commission has thought that it would be of advantage to make it in some detail. In doing so, many of the reasons for the proposal will appear. The detailed recommendation, therefore, is as follows:

1. That a Department of Mines be constituted. So far as the *Minister of Mines* is concerned, until the work increased beyond its present importance, the portfolio could be combined with that of some other Department. That is a matter for determination by the Government.

2. That the Department of Mines be given jurisdiction over and exercise the administrative functions of the Government in regard to all matters directly concerning the coal industry of the Province; except those which more properly belong to a Department of Labor if and when such a Department is set up, such as the administration of any Provincial Acts dealing with wages or industrial disputes. For example, the Mines Branch at present under the Executive Council would come under the Department of Mines and the "Minister" in the Mines Act would be made the "Minister of Mines." That Act might be further amended to give certain of the discretionary powers to the "Deputy Minister" rather than to the "Minister" as at present.

3. That, if and when the Province of Alberta obtains control of its natural resources, the Department of Mines exercise the functions of ownership of coal and control of its development.

4. That, in all matters concerning the coal industry of the Province, it be the invariable custom of the Government to act on the advice of the Mines Department. For example, the Government supports the Council of Scientific and Industrial Research and is represented on that Council. Its representatives should act in full accord with the Mines Department in determining what matters connected with coal are most important and how they should be handled by the Research Council. The work of the Trade Commissioner, in connection with the marketing of coal, should, similarly, be placed under the control either direct or indirect of the Department of Mines.

5. That, with the same object of securing unified control of all Government activities affecting the coal industry, certain other provincial departments and institutions be made to conform either by legislation or custom. For example, the power of the Workmen's Compensation Board to make regulations regarding the conduct of the coal industry should be amended to the power to make recommendations for Orders in Council and the Government should act on the advice of the Department of Mines in passing such orders.

6. That a chief function of the Department of Mines be the assembling and publication of all important information concerning the coal industry.

7. That the Minister of Mines and his Department, with the assistance where necessary of other Ministers and Departments

of Government, be thus the agency for co-ordinating all Governmental activities in aid of or in regulation of the coal industry. For all that a Government must or can do for an industry, it is all-important to have this concentration of responsibility, knowledge, experience and control in action. The practical steps, designed to improve conditions, which the Commission recommends in this Report, require just such unified control of Governmental activities to make them effective.

8. That the Deputy Minister of Mines be chosen with great care and a full realization of the requirements of the position. At the outset and until the Province obtains its resources or the work otherwise becomes too heavy, the Deputy Minister must combine the functions of administration of the Department with those of Chief Consulting Mining Engineer. As such, he should not only be a thoroughly competent and experienced engineer but also enjoy a reputation for ability and fair dealing, that will command instant respect for his views on the part of both the operators and the workmen within the coal industry.

9. That a statistician for the Department be also chosen with care. The requirements for the post are that the occupant shall know the real value of figures, collecting only such as have significance and be able to present them so that they tell their proper story. He should systematize the returns required so as to make them as few and simple, as is consistent with gathering essential information, and see that there is no overlapping of Government Departments in asking returns from the coal industry.

26. Coal Industry Advisory Council

The foregoing recommendation was communicated, informally, to the Government, in December last, and, at the same time, it was suggested that along with the formation of a Department of Mines should go the setting up of an Advisory body to collaborate with it. In this case also, the recommendation is made in detail and from the outline of the functions of such a body may be deduced the reasons which weighed with this Commission in making the proposal. The recommendation in detail is as follows:

1. That legislation be passed providing for the appointment, by the Lieutenant Governor in Council, from time to time, of a Coal Industry Advisory Council of Alberta.

2. That the Deputy Minister of Mines be chairman of the Council and that for the present the other members be: an operator and a mine workman from the bituminous field; an operator and a mine workman from the lignite and sub-bituminous fields combined; a representative coal dealer; and another business man of the Province who is not connected with the coal industry, the latter to represent the general interests of the public; a total membership of seven including the Chairman.

3. That the composition of the Council be not made rigid by legislation but that it be left to the Government to choose whom they please and how they please. The object is to secure a com-

paratively small body, that will be thoroughly representative of the industry. The Government should not be trammelled in their choice by giving any organization the right to nominate members. The desire to command public approval of the selection made will be a sufficient guide in the matter.

4. That appointments normally be made for two years subject to renewal or revocation at any time.

5. That, as the name implies, this Council be advisory only. Its duty will be to advise the Minister and Department of Mines and through them the Government on all matters under Government control or requiring Government action. Its advice may not be unanimous and may not be taken; but, even so, it will serve to keep the Government in touch with the industry. If wisely chosen, it may be expected to accumulate experience and wisdom and to exert a powerful and growing influence on the Government.

6. That the Council meet regularly once a month or oftener in emergencies. Frequent meetings are essential in order to avoid delay in settling questions or in the alternative to prevent them being settled without reference to the Council.

7. That members of the Council be paid a moderate fee for each attendance in addition to travelling expenses where such are incurred.

8. That the Council, in addition to advising on all matters of Governmental control and activity in relation to the industry, be expected to take the initiative in promoting reforms and movements for betterment within the industry itself, apart from Governmental action.

27. Permanent Coal Commission Not Recommended

Encouraged no doubt by the results in other lines several suggestions were made that the coal industry of the Province be put under the control of a permanent Coal Commission. These suggestions have not been adopted in this Report for many reasons. There may, in the future, be quasi-judicial functions to be performed in connection with the industry for which it will be essential to constitute some body independent of the Government. Something of this nature is discussed in Chapter IX as part of the programme to control over-development. But, for the present, this Commission much prefers the erection of a Department of Mines, plus an Advisory Council, thus combining all Provincial activities under unified control, which, at the same time, is an integral part of the Governmental machinery, directly responsible to the Legislature and the people and directly controlling the public purse.

CHAPTER IX

SUNDRY PROBLEMS

A. OVER-DEVELOPMENT

1. Extent of Over-Development

By the facts given in Chapter III, it will be seen that, up to the 31st December, 1924, 1,051 "mines" had been opened; 674 abandoned permanently; and 68 additional closed, at least temporarily, leaving only 309 in operation at the date mentioned. This was considerably less than one-third of the aggregate total. The losses in abandoned mines have been estimated at nearly $12,000,000; and the capacity of such mines, at the time of abandonment, counting on only 6 months' operation for the lignite and sub-bituminous mines, would correspond to an annual output of nearly three million tons—about half the present output. Despite this very heavy mortality, the surviving mines have a capacity, allowing for seasonal operation, of at least 10,000,000 tons a year or 50% more than there is any present outlet for. If there were an outlet, that capacity could be very rapidly increased by development work at each mine, to say nothing of increased efficiency in the way of machinery, etc. It is abundantly clear, therefore, that there are too many mines now in existence; and this has been the condition for many years past. Yet, the year 1924, the last year examined in this connection, shows 60 new mines opened and, in spite of abandonments, the number in operation at some time during that year was the highest point yet reached.

Looking more closely into this question of over-development, it is found to present special features. In the bituminous field, the number of mines is not nearly so great; but the aggregate present capacity is about double the maximum output yet achieved. In this field, there is much less danger of the opening of new mines because of the great expense involved. In the sub-bituminous mines, too, the number of operating units is not great. Owing to the location of the majority of these mines and the nature of the seams there is, to some extent, a similar deterrent from opening new mines owing to the expense. The rated capacity of these mines, on a basis of 150 days' operation per year, does not show a very great excess over the output achieved; but, on a full year of 300 days, would likewise be more than double. In the lignite field, the over-capacity of the present mines on a full year basis is between two and two and a half times the market requirements but, taken on a six months' season, the excess is not nearly so great. It is in the lignite field, however, that the over-development in numbers rather than in capacity is such a marked feature. In addition to its general

seasonal character, the operation of the lignite mines has, under the present system of marketing, been subject to sharp peaks of demand, at which times the full capacity of the mines both as to development and working force is strained to the utmost. For a few weeks during the winter, it is usual for all mines supplying the domestic trade to be working to capacity. As pointed out elsewhere, this condition is caused by the dealer and consumer buying only for immediate needs. So long as the dealer can get supplies from the mines the moment he requires them, this condition will continue. It must be recognized that such a system obviates the necessity for stocking coal and is, in itself, an economical method of distribution; but the apparent advantages entail far too many disadvantages of the nature discussed in the next paragraph.

2. Evils of Over-Development

The evils resulting from over-development have been dealt with fully under the appropriate headings, elsewhere in the Report. They may be summed up as low earnings and hardship for the workmen, in spite of high wage rates; loss of capital invested in the mining industry; high costs and the loss of markets, thereby compelling still higher costs and more loss of markets in a vicious circle; and depletion of the resource through incomplete recovery.

3. Causes of Over-Development

Among the causes contributing to this condition may be mentioned the immense area of coal lands; the fact that these may be taken up at purely nominal figures; the absence of any effective control over the opening of mines; and, above all, the very small amount of capital required for the preliminary exploitation and the winning of the first coal. Strikes are a very important cause of over-development. New mines are opened to take care of the business, thus temporarily displaced, and remain, after the settlement of the strike, as further over-development of the industry. In the lignite field, especially, with the low initial expense already referred to, the highly seasonal demand has been a fruitful cause of over-development. The full number of mines that are kept busy for perhaps only two or three weeks in the year run thereafter as surplus to requirements. In the United States, there has been a further cause which is not reproduced here. Their limiting factor has often been the railway car supply and, under a system of distribution of cars according to capacity, a premium was put on over-capacity.

4. Suggested Remedies

Such then is the problem and some of its causes. Many remedies have been suggested to this Commission. These fall into three chief categories: First, to prevent the opening of any more mines and let competition within the industry take care

of the situation; secondly, not only to stop new openings but to take steps to close a number of the present mines; and thirdly, nationalization.

To deal with these in reverse order, nationalization, which is proposed as a cure for all the difficulties of the industry, will be discussed in a section by itself, later in this chapter, but, anticipating the conclusion there reached, it is not advocated by this Commission as a remedy for over-development.

The drastic remedy of closing down a number of the present mines, generally stated in round figures as 50%, has been put forward in several forms. The attention of the Commission has been called to one such plan presented to the National Advisory Fuel Committee of the House of Commons at Ottawa. Briefly, this scheme proposed to put all the mines in the Province, except bituminous mines and "wagon" mines, under the jurisidiction of a Commission, the present Public Utilities Commission being suggested. No mine would be allowed to operate without a license. Licenses were to be granted on the general ground of the mine being required for the market but with many safeguards as to operation. Those refused licenses were to be compensated out of a fund built up by a tax on every ton of coal mined by the licensees. The author of the scheme assumes, without giving his grounds for doing so, that $3,000,000.00 would be required as compensation and, on the basis of two and a half million tons a year produced by the licensees, this would mean a tax of 20c a ton for 6 years. Why the period of recouping the Government for the amount paid as compensation was limited to 6 years was not stated. It was presumed that this tax would come out of the saving effected by steadier operation and that there would remain a sufficient further saving to reduce the price of coal to the consumer and still show better results to the operators. A similar suggestion, without details, was to close down 50% of the mines now operating, to see that no more opened up, until such time as it can be proved that the operating mines cannot supply the demand, and to let the mines, that are picked out to work, compensate those that go out of business. One of the difficulties of any such plan is that it would seem to require some scheme for control of prices, unless the restrictions on operation were stopped at a point short of monopolistic control. Apart from many legal questions, which might be involved in any attempt by the Province to take action along these lines, this Commission foresees too many difficulties in the working out of the details to be able to recommend it.

The requiring of permits for the opening of new mines has many advocates, the granting or withholding of the permit to be based on the judgment of some official body as to the advisability, from a marketing point of view, of having the new development. The Commission has considered these suggestions very thoroughly without reaching any recommendation of this nature, which it would consider practicable. As in the case of the general licensing system, administrative and legal difficulties appear to be very great.

In contrast to all these suggestions, many other witnesses opposed interference of any sort, on such general grounds as British traditions, the working of economic laws, etc. One such witness stated that, in his opinion, there could never, theoretically, be too much of anything in the way of industrial development. There must be some economical reason why all the mines were there or they would not be there. If a mine could sell even 1,000 tons of coal a year, there must be a demand for that 1,000 tons. It would hardly be fair to say that the operator had no business to be mining it, if somebody wanted to buy it. If the ordinary economic laws of supply and demand and competition did not eliminate that man, he had a right to be there. If he could not exist, the ordinary natural processes of competition and economic laws would put him out of business. Other witnesses, however, recognized that the law of the survival of the fittest was at least delayed in its operation by the constant supply of new victims.

As opposed to these champions of private rights, there were representatives of the consumers and workmen who presented their claims for redress. Without going deeply into such very general questions and without minimizing considerations of fairness to all concerned which should characterize any legislative action, it need only be remarked that there are plenty of analogies for public policy overriding the uncontrolled exercise of private rights.

5. Recommendations Re Over-Development

To revert to the above suggested causes of this condition of over-development, the first is the immense areas of coal lands in the Province. How are these held? According to the evidence given in detail in Chapter II, the estimated coal reserves as there described appear to be, at present, controlled as follows: the bituminous coal, as to 16% by operating companies, as to 64% by the Dominion Government, as to 1% by the C. P. R. and H. B. Co. and as to 19% by others; the sub-bituminous coal, as to 10% by operating companies, as to 63% by the Dominion Government, as to 6% by the C. P. R. and H. B. Co. and as to 21% by others; the lignite coal, as to 11% by operating companies, as to 45% by the Dominion Government, as to 20% by the C. P. R. and H. B. Co. and as to 24% by others; making the ownership of the reserves for all coal, as to 14% by operating companies, as to 60% by the Dominion Government, as to 5% by the C. P. R. and H. B. Co. and as to 21% by others. It will take much further study to determine two general questions: First, a delimiting, within the areas used for these estimates, of such portions thereof as are of the first immediate importance from the point of view of progressive development; secondly, a complete analysis of the coal rights now controlled by operating companies and others as to the exact form of that tenure, so as to see how much is leasehold and may conceivably revert to the Dominion Government. The general result of this examination, however, is

to show that while the first three groups control together about 80%, there remains in the hands of others about 20% of the available reserves, making a very considerable factor to be reckoned with.

A carefully thought out plan has been suggested to the Commission, looking to complete control over all undeveloped coal lands by a pooling system. The scheme is that all of the lands now owned by the Government and the two big land companies would be placed under the jurisdiction of a Board, to be leased only as required. Other owners would be given an opportunity to add their holdings and the revenue obtained would be distributed, in accordance with the proportionate interests of the various parties in the whole of the areas vested in the Board. It seems to this Commission quite beyond the sphere of practical politics to expect the people to approve of other holders of coal property being accorded equal privileges with the Government itself, thus assuring to them, in perpetuity, their present position, which may be more or less accidental or untenable. Another insuperable objection to the scheme would seem to lie in the varying values of the holdings. There are some cases, particularly among the freehold owners of coal rights, where the coal is either non-existent or is so remote from transportation as to be valueless. On what basis, too, could a holding underlaid by 80 feet of recoverable bituminous coal be combined with a 5 foot seam of perhaps inferior lignite? Aside from all other difficulties, therefore, it would seen quite impossible to do justice in the setting up of such a pool.

The Commission, then, has, for the present at least, found itself unable to put forward any of the above schemes as a recommendation on its part. It may very well be that some one or more of them, with the necessary modifications, will be the only way out and may in time be adopted. The Commission is very far from claiming any finality for its decision not to put them forward in this Report, neither does it claim that what it is about to suggest is an adequate substitute. Once more, it seems a case of doing first things first. As the Province seems likely to acquire its natural resources, the following suggestions, insofar as they affect the ownership of coal rights or leases, are addressed directly to the Province as such owner. Should anything interfere with the consummation of the transfer, they would become recommendations for something which the Province should urge on the Dominion Government.

There should, first, be a complete tabulation of existing leases, according to their terms, to be followed by insistence on strict observance, particularly in the matter of the payment of rentals, etc. The underlying purpose in this would be to recover control of as large a proportion as possible of such leased lands, not required for development. Frankly, this would be an attempt to get such leases out of the hands of those who can only be described as speculators in them. With this object, advantage should be taken of every right possessed by the Government under the terms of the respective forms of lease. To recom-

mend this course is not to criticize the original granting of such leases, which took place for the most part under pioneer and prospecting conditions which no longer require consideration. Neither will it, in the opinion of this Commission, constitute any breach of faith, however slight, with the owners of such leases. When the practice of disposing of coal rights in fee simple was abolished, the whole underlying principle of leasing, the limiting of the amount that could be staked by any individual, the difficulty raised to the recognition of assignments, which latterly has become an absolute refusal, the right to call for operation under the lease—all clearly evidence the intention to prevent speculation in such holdings and that the essence of the bargain between the parties is that the Government, in exchange for the rental and royalty, put its coal in the hands of a lessee to be produced, latterly at least, under direct Government supervision.

Having thus cleared up the situation to some extent, the next step would appear to be to delimit the areas of coal of immediate practical importance and to examine carefully the ownership and control of coal rights within such areas. Within each delimited area, it would be desirable to work out some plan for a uniform policy on the part of all holders. Certainly the C. P. R. may be expected to be moved by the same considerations, as would dictate Government policy. They, also, would be interested to promote the general well-being of the coal industry rather than to obtain a few dollars from the premature disposal of coal rights. It is important in this connection, to know that the C. P. R. and Hudsons Bay Company do not sell their coal rights but have a system of leasing not unlike that of the Government.

The next step would be a firm policy in respect of new developments on Government-owned or controlled land within the delimited areas. If other owners cannot be induced to co-operate and such independent holdings are sufficient, the Government policy for that particular area may require modification; because the Government cannot be expected to make fruitless sacrifices; but it is not likely that such a condition would obtain to a troublesome extent. A study of the analysis of present ownership in Chapter II and consideration of the factor of expense in opening a mine would point to the lignite field, as the only one in which such a complication would be likely to occur. Subject only to such considerations as this, no more Government leases should be granted; until it is proved that additional supplies of coal are needed or that the new operation will prove more advantageous. For the time being, such control should be so nearly automatic, that it can be exercised without the machinery of an independent Commission, but, later, it may be necessary to set up some quasi-judicial body or add this to the functions of some existing body. Control of the issuing of new leases on Government lands has been recommended by the American Commission, as an aid to the solution of the same problem of over-development.

Along with this action should go strict enforcement of all the powers for regulating the opening and running of mines, whether those powers be contained in the terms of the lease or arise from consideration of the safety and the health and comfort of the mine workers. All the recommendations of this Commission in connection with the enforcement of the Mines Act and the universal provision of proper living and housing conditions should be understood to be repeated here. The broad general recommendation is that allowances for pioneering conditions should be definitely discarded and the industry recognized to be on a permanent basis and regulated as such. Strict enforcement in all these matters will, of itself, cut out much of the ruinous competition and in a way to which no one can raise objection. In the same way, any steps to prevent certain operators making a practice of not paying wages will remove that most unfair form of competition. To insist on proper protection of entries, on the necessary precautions or the right order of extraction in overlying seams and, in general, on good mining practice will not only conserve the resources but will likewise tend to remove the evils at present grouped under the heading of over-development.

The Commission realizes that the control of new development will provide amelioration for the somewhat distant future, rather than for the present. It realizes, too, that all of the above may not take the industry the whole journey to its destination; but it is as far along the road as this Commission can see clearly. To get that far will take time and effort and, in the process, the mapping of the rest of the route may become easier. Indeed, while these steps are being taken, time will probably remove many of the obstacles and, if these steps be taken promptly and with vigor, at least some progress will have been made.

B. SMALL MINES

The analysis of producing mines, given in Chapter III, shows that, for the year 1923, 293 mines out of 362 produced only 4.6% of the total. These were mines producing under 10,000 tons a year and their total 1923 output was 311,499 tons, an average of 1,063 tons each. Of these mines, 217 produced less than 1,000 tons each and 163 were in the class of less than 500 tons. Mines with such small outputs may be divided into three general classes; prospects, being the initial opening of what is intended for a larger operation; farmers' mines, mostly working outcrops; and wagon mines proper, mines not enjoying access to a railway but generally desiring it and, meantime, competing, in some instances, with the regular "shipping mines," in spite of the handicap of wagon haulage to the nearest railway.

As their percentage of the total output indicates, these small mines are not much of a factor, viewing the industry as a whole; but there was some complaint before the Commission as to their competition in certain markets. For example, witnesses thought that the small mines aggravated the coal situation in Winnipeg, although it might only be a single car of coal that was offered

at a low price. To the extent to which such mines produce their coal cheaply owing to improper mining methods, their competition is considered unfair. This feature will be referred to a little later. Insofar as they produce the coal more cheaply by reason of natural advantages, small overhead expense, etc., their competition, while it may be severe, cannot be deemed to be unfair and this was recognized by many operators of larger mines. The advantages of such mines are that they form the source of supply for settlers in outlying districts remote from railways. Especially in seasons of bad crops, the neighboring farmers have much resource to such mines, in some instances going considerable distances for the coal. In the past, too, mines opened in this way have been the cause of the development of a whole new field. The charge was freely made, however, that, in many instances, such mines were a detriment to the proper development of the coal resources of the Province. By going in at an easily accessible point, not leaving the proper pillars to protect the entry and then, when caving takes place, opening up at an adjacent point with a similar result, the best access to that particular seam may be spoiled, interfering with proper drainage later on and causing a great deal of additional expense for a proper entry. This process certainly creates unfair competition against the man who is conducting his operations in a proper way and opening up a mine for a permanency.

The Commission has no recommendation to make based on the mere size of the mine but, insofar as small mines offend in the ways above indicated, they should come under the same enforcement of the regulations and requirements so as to secure the proper opening up of the mine, proper mining methods and due conservation of the resource, together with the provision of proper living and housing conditions for the workmen. In some cases, these small mines default in the payment of wages and would then be subject to the recommendations on that matter made in Chapter VIII. Such mines would also come under the same general rule of discouraging the opening of new mines, until fully warranted.

C. AMALGAMATIONS OF MINES

In a previous chapter, the Commission stated its opinion that economies are required on a larger scale than can be secured merely through co-operative marketing; and that, in time, a solution will be found in a more complete merging of the mining interests. There seems to be a considerable change in the public attitude towards consolidations in business, brought about no doubt by the developments of modern machinery, transportation facilities and marketing methods. However true this may be as a general trend of modern business, the proposal requires careful examination for each particular case. Many ill-considered statements are made with respect to it, as instance one witness who was confident that a concentration of coal mining operations would cut costs in half.

Some of the definite advantages claimed for a merger of the mines may be summed up under the following headings. In the first place, it could bring about the working of the most easily mined coal, shutting down the mines that had less favorable conditions. By shutting down some mines, the rest could be given a full year's operation. By reducing the number of independent operating units, there would be a saving in management and general overhead expenses. Some saving, also, should be effected by consolidated purchases.

Other witnesses claimed that there were more arguments against than for any attempt to merge the mines. Whatever the theory might be, in practice monopolies had not operated more cheaply than the independent units. Numerous instances were given of this. One witness stated, from personal experience of a couple of mergers, that the result had been to increase the cost of coal. This witness described in detail the merger of the bituminous mines in Illinois some years ago. Seventy-four properties were bought up and cut down to about thirty-five working mines and, for a while, everything was all right. The reason that the mines could be bought was that they were in difficulties. After the merger was completed, for two or three years, things went fairly well; but the money paid for the old mines was used to open up new mines to compete against the merger; and the last case was worse than the first. The merger afterwards went into the hands of a Receiver. Others also laid much emphasis on this feature of new mines, pointing out that, even if all the present mines were merged, there was nothing to prevent other mines from starting. The practical difficulties were pointed out in that each mine owner would have an exaggerated idea of the value of his property. One witness referred to a merger in Great Britain which ended very disastrously, the prime cause being the inflated value of a number of the constituent properties.

Of all these objections, the one which appears to the Commission as the most valid is that based on the opening of new properties to compete with the merger. Generally speaking, especially where proper regulations are not rigidly enforced, such new mines produce coal at the outset at a lower cost than they can maintain. A succession of new openings, therefore, can cause perpetual disturbances in the market. It may, then, be laid down as a condition precedent to any attempt at the amalgamation of mining interests that new development shall be controlled, in the way discussed at the opening of this chapter. This being granted, a series of mergers would, in the opinion of this Commission, prove of great benefit to the coal industry of Alberta. Each mine must be taken in at a proper valuation. There would be fewer mines and fewer men employed but those who were employed would be given steadier work. There should be a fair return on the capital invested, always assuming that the merger was launched on a proper basis of capitalization in the first place. The economies in general overhead and in operation due to the steadier run should be reflected in a more uniform and

lower cost of coal produced. There should be greatly increased efficiency and important economies in the marketing of the product.

It is hardly conceivable that any law could be passed to force mergers. Legislative action will, rather, consist in removing any impediments which may now exist. All of the recommendations already made for curing, in time, the evils of over-development, for insisting on proper mining, working and living conditions and, generally, for stabilizing the industry will, if put into effect, provide the circumstances in which amalgamations could function with advantage to all concerned.

D. NATIONALIZATION

Several of the unions, in their replies to the Questionnaire, and a number of witnesses before the Commission put forward nationalization as the only solution to whatever troubles might exist in the coal industry. With many, this was evidently part of a theory of political economy and they refused to consider any amelioration of conditions, as tending to perpetuate the present system to which they felt themselves opposed on principle. The witnesses, however, were not prepared to formulate any detailed plan for putting their suggestions into effect.

The Miners' Federation of Great Britain has recently placed before the British Coal Commission a memorandum advocating nationalization and giving some outline of the scheme. Very briefly, it would have a Power and Transport Commission, attached to the Board of Trade, which, among other duties, would be the final authority on larger questions of policy relating to the coal industry. In addition, there would be a National Coal and Power Production Council, to act in somewhat the same capacity as the Board of Directors of a Company. Under this would be a series of Provincial Councils and Committees at each mine. Alongside this organization, a Consumers' Council would be established. The scheme is that any questions of wages and prices should be settled by the Production Council and the Consumers' Council and, failing agreement between the two, by some independent tribunal. The authors of the scheme claim that complicated as it may seem it is in effect simpler than the actual administration of the coal and allied interests under private ownership. The scheme contemplates recompense to present mine owners up to the cash value of the property but paid in Government stock, the amount to be calculated at current market prices for the stock. The service of the coal compensation stock would be a charge on the proceeds of the nationalized coal industry. The Miners' Federation itself is opposed to the principle of any compensation for the mineral royalties. To those now engaged in the distribution of coal, payment would be made for as much of the actual physical assets as would be used by the new distribution authorities. It is also part of the plan that "some equitable allowance should be made as compensation for disturbance."

The arguments of those opposed to nationalization have often been stated and may be summed up as follows: Past experience of State enterprise gives no ground for the belief that it could conduct the coal industry more efficiently than it has been conducted under private control. Success in industry constantly calls for the taking of responsibility and the incurring of commercial risks, whereas a State official is not accustomed to taking risks and is not justified in doing so, except in cases of grave national emergency. The opponents of such a scheme also point to the very great danger of political considerations entering into the question, no matter what steps may be taken, in theory, to avoid this. In particular, the experience of the past has proved that strikes are not prevented by State ownership or management. The United States Coal Commission, in recommending against any plan of nationalization, stated that there was no evidence that the policy of Government ownership would do more than add grave problems of administration.

Perhaps, it will be sufficient, for the purpose of this Report, to record that none of the advocates for nationalization regarded it as feasible, if carried on only as a provincial undertaking. They all felt that it must at least be nation-wide and then accompanied by an absolute embargo against the importation of American coal. As already stated, the local advocates were not ready to make definite suggestions for the carrying out of a plan of nationalization as applied to local conditions. Certainly a first step would be to have the Government exercise the powers of control, which it at present possesses, with the modification of those powers and the stricter enforcement of them suggested in this Report, before contemplating any fundamental change in the whole system.

APPENDIX I

COMMISSION

[GREAT SEAL] (*Sgd.*) R. G. BRETT,
Lieutenant Governor.

CANADA
PROVINCE OF ALBERTA.

COMMISSION

(Substituted for Commission dated October 30, 1924.)

GEORGE THE FIFTH, by the Grace of God, of the United Kingdom of Great Britain and Ireland and of the British Dominions beyond the Seas, KING, Defender of the Faith, Emperor of India.

To all to whom these presents shall come, or whom the same may in any wise concern, GREETING:

WHEREAS in and by an Order of Our Lieutenant Governor in Council, bearing date the First of December, one thousand nine hundred and twenty-four, it was declared that the coal mining industry of the Province of Alberta was a matter of public concern and that all facts, circumstances or conditions which would be deemed helpful in determining and establishing a wise and efficient policy by the Government relative to the said industry are a matter of public concern and that in particular and without limiting the generality of the foregoing, the following are matters of public concern:

(*a*) Coal-mining titles.

(*b*) Capitalization, investment and the financial history and position of operators.

(*c*) Costs, income and profits and losses.

(*d*) Production.

(*e*) Transportation, storage and distribution of product.

(*f*) Marketing, selling prices, methods of use and by-products.

(*g*) Coal reserves, conservation and waste of coal.

(*h*) Mine workmen, wages and working conditions, earnings, living costs and conditions, housing conditions and educational facilities.

(*i*) Mining conditions, mining methods, use of labor-saving devices and provisions for safety of workmen.

(*j*) Labor relations.

(*k*) Conditions elsewhere and particularly in competitive fields.

(*l*) Legislation affecting the industry in Alberta and elsewhere.

AND WHEREAS by the said Order in Council, Harry Marshall Erskine Evans, of Edmonton; Robert Giffen Drinnan, of Edmonton, and Frank Wheatley, of Blairmore, with the said Harry Marshall Erskine Evans as Chairman, were appointed Commissioners to inquire into the foregoing matters and to report to the Lieutenant Governor in Council thereon;

AND WHEREAS by the said Order in Council certain powers were conferred upon the said Commissioners and upon the said Harry Marshall Erskine Evans as Chairman of the said Commission;

NOW KNOW YE that by and with the advice of our Lieutenant Governor in Council, WE DO BY THESE PRESENTS DECLARE that the Coal Mining Industry of the Province of Alberta is a matter of public concern and that all facts, circumstances or conditions which would be deemed helpful in determining and establishing a wise and efficient policy by the Government relative to said industry are a matter of public concern, and that in particular and without limiting the generality of the foregoing, the following are matters of public concern:

(*a*) Coal-mining titles.

(*b*) Capitalization, investment and the financial history and position of operators.

(*c*) Costs, income and profits and losses.

(*d*) Production.

(*e*) Transportation, storage and distribution of product.

(*f*) Marketing, selling prices, methods of use and by-products.

(*g*) Coal reserves, conservation and waste of coal.

(*h*) Mine workmen, wages and working conditions, earnings, living costs and conditions, housing conditions and educational facilities.

(*i*) Mining conditions, mining methods, use of labor-saving devices and provisions for safety of workmen.

(*j*) Labor relations.

(*k*) Conditions elsewhere and particularly in competitive fields.

(*l*) Legislation affecting the industry in Alberta and elsewhere.

AND WE DO HEREBY nominate, constitute and appoint Harry Marshall Erskine Evans, of Edmonton; Robert Giffen Drinnan, of Edmonton, and Frank Wheatley, of Blairmore, with the said Harry Marshall Erskine Evans as Chairman, our Commissioners to inquire into the foregoing matters and to report to the Lieutenant Governor in Council thereon: TO have, hold, exercise and enjoy the said office, place and trust unto Our said Commissioners, together with the rights, powers and privileges and emoluments, unto the said office, place and trust, of right and by law appertaining, during pleasure;

AND WE DO HEREBY, under the authority of the said Order in Council dated the First day of December, 1924, confer upon the said Harry Marshall Erskine Evans, the Chairman of the said Commission, whenever the Commissioners may deem it necessary, authority to investigate personally the matters hereinbefore referred to under the headings (*b*) and (*c*), and other matters as hereinbefore recited, and to receive information respecting such matters from operators and members of their staffs in confidence and directing that such information, when so given in confidence, should not be made public nor divulged to the other Commissioners as pertaining to any individual operator, but merely as information pertaining to the industry;

AND WE DO HEREBY, under the authority of the Act respecting Inquiries Concerning Public Matters, being Chapter 26 of the Revised Statutes of Alberta, 1922, confer upon our said Commissioners the power of summoning before them any witnesses, and of requiring such witnesses to give evidence on oath, orally or in writing or on solemn affirmation (if they are persons entitled to affirm in civil matters) and to produce such documents and things as Our said Commissioners shall deem requisite to the full investigation of the matter into which they are hereby appointed to examine; and to have the same power to enforce the attendance of witnesses and to compel them to give evidence as is vested in any court of record in civil cases;

AND THAT OUR said Commissioners shall have power to do such other acts and things as are requisite to the proper carrying out of the objects for which Our said Commissioners are appointed;

AND WE DO HEREBY require and direct Our said Commissioners to report to Our Lieutenant Governor in Council the result of their investigations, together with the evidence taken before them, and any recommendations that they may see fit to express thereon.

IN TESTIMONY WHEREOF WE have caused these Our Letters to be made Patent and the Great Seal of Our Province to be hereunto affixed.

WITNESS: HIS HONOUR ROBERT GEORGE BRETT, Lieutenant Governor of Our said Province at Our Government House, in Our City of Edmonton, this FIRST day of DECEMBER, in the year of Our Lord one thousand nine hundred and twenty-four, and in the FIFTEENTH year of Our Reign.

By Command:

(*Sgd.*) J. E. BROWNLEE,
Provincial Secretary.

APPENDIX II.

Mines in operation in 1924 *according to Divisions and Coal Areas, showing also output of these mines in* 1923. *Where no output is shown for* 1923 *the mine was not operating that year. There were other mines in operation in* 1923 *and not in* 1924; *but these mines are not shown in the list.*

Division		Coal Area.		Mine.			
No.	Name.	No.	Name.	No.	Name.	Output 1923 (Tons)	Output 1924 (Tons)
1.	Crowsnest	K. 9	Old Man				
		K. 10	Crowsnest	40	Hillcrest Colleries, Ltd.	279,042	159,124
				87	West Canadian Colleries, Ltd. (Bellevue)	339,068	195,962
				88	International Coal & Coke Co., Ltd.	256,491	118,171
				133	Mohawk Bituminous Mines, Ltd.	13,628	20,036
				153	Pass Bituminous Colleries	...	2,811
				199	McDowall Bros.	64	569
				204	McGillivray Creek Coal & Coke Co., Ltd.	427,363	249,610
				295	H. H. Owens	2,020	3,580
				396	West Canadian Colleries, Ltd. (Greenhill)	285,064	166,865
				715	Richard Murtland	1,446	637
				802	Sunburst Coal Co.	...	50
				1153	Rhodes Bros.	...	1,395
				1183	Joseph Little	...	35
		B. 7	Pincher	76	Estill Mining Co.	4,363	3,691
				77	Kayes & Rhodes	334	136
				779	Boundary Coal Co.	....	....
				1096	J. L. Patton	1,155	1,423
				1108	F. L. Mouysset	....	45
				1132	Marlow and Gardner	....	1,072
				1175	Thomas Tonge	....	132
2.	Canmore	K. 7	Cascade	2	Canmore Coal Co., Ltd.	264,447	134,827
		K. 8	Highwood				
		B. 5	Morley	1158	Wm. McGlashing	....	121
		B. 6	Pekisko	30	A. D. McPherson	428	564
				70	L. F. Rathbun	....	220

APPENDIX II. (*Continued*)

Division. No.	Division. Name.	Coal Area. No.	Coal Area. Name.	Mine. No.	Mine. Name.	Output 1923 (Tons)	Output 1924 (Tons)
2.	Canmore (Cont.)	B. 6	Pekisko (Cont.)	361	McDonald, Dunn & McCallum	305	832
				858	Edward Little	....	82
				924	David B. Blacklock	1,228	642
				1004	Francis Durocher	567	1,457
				1061	Ernest Skeen	65	241
				1155	Wm. Kummer	....	511
3.	Brazeau	K. 4	Nordegg	256	Brazeau Collieries, Ltd.	493,378	174,772
		K. 5	Clearwater				
		K. 6	Panther				
		B. 4	Saunders	388	Bighorn & Saunders Creek Colls., Ltd.	27,940	38,169
				756	Acorn Coal Co., Ltd.	13,720	5,461
				852	Alexo Coal Co., Ltd.	31,052	24,916
4.	Mountain Park	K. 1	Smoky River				
		K. 2	Brule	429	Blue Diamond Coal Co., Ltd.	248,659	6,547
		K. 3	Mountain Park	282	Mountain Park Collieries, Ltd.	185,865	67,173
				693	Cadomin Coal Co., Ltd.	297,507	157,425
				905	Luscar Collieries, Ltd.	151,102	61,699
		B. 2	Prairie Creek				
		B. 3	Coalspur	769	Sterling Collieries, Ltd.	174,835	215,203
				771	Foothills Collieries, Ltd.	24,604	39,129
				775	Balkan Coal Co., Ltd.	17,764	26,723
				833	Superior Collieries, Ltd.	8,892	28,083
				846	Saunders Ridge Coal Co., Ltd.	16,512	18,791
				896	Vitaly Co., Ltd.	18,339	17,231
				1002	Coal Valley Mining Co., Ltd.	113,632	154,521
				1014	J. Sobotin & Co.	2,696	4,114
				1078	Corona Coal Co., Ltd.	300	1,597
				1157	Bryan Coal Co., Ltd.	32	658
5.	Lethbridge	B. 9	Lethbridge	6	Canadian Pacific Railway (Galt Mines)	363,160	193,986
				54	C. S. Donaldson Coal Co.	11,459	28,747
				55	Robert Reed	665	355

APPENDIX II. (*Continued*)

Division. No.	Division. Name.	Coal Area. No.	Coal Area. Name.	Mine. No.	Mine. Name.	Output 1923 (Tons)	Output 1924 (Tons)
5.	Lethbridge (Cont.)	B. 9	Lethbridge (Cont.)	56	R. J. Baker	317	114
				104	Consolidated Diamond Collieries, Ltd.	....	9,671
				174	North American Collieries, Ltd.	162,444	122,205
				192	City of Lethbridge	12,506	12,574
				203	New Barnes Coal Mine Co.	325	535
				247	Chinook Coal Co., Ltd.	72,232	6,713
				395	Andrew Molloy	633	846
				409	John Rollingson	785	801
				676	Lethbridge Coal Co., Ltd.	26,376	21,864
				738	George Rollingson	257	362
				750	John Noble	103	157
				761	Southern Alberta Coal Co.	706	1,983
				871	J. F. Hamilton	867	2,813
				889	Edward A. Wocknitz	464	705
				981	John Rollingson	616	338
				983	E. H. F. Warren	665	578
				984	H. B. Hughson	37	17
				988	Bateman & Gent	1,006	257
				1020	A. Rozzolini	....	34
				1045	Bembridge, Jackson & Kurtzvey	202	385
				1086	Benjamin Oliver	371	855
				1092	Central Coal Co. of Lethbridge, Ltd.	....	834
				1095	John Suran	....	302
				1109	Koshawick & Pashkiwsky	....	1,068
		B. 8	Magrath	316	Evan Evans	341	175
				855	Henry Noble	958	809
				996	W. H. Vair	491	680
				1009	Alex. Noble	261	1,048
		B. 12	Taber	82	Bay Coal Co., Ltd.	4,739	13,929
				105	Majestic Collieries, Ltd.	7,295	56,374
				132	Canadian Pacific Railway Co.	747	819

Division. No.	Division. Name.	Coal Area. No.	Coal Area. Name.	Mine. No.	Mine. Name.	Output 1923 (Tons)	Output 1924 (Tons)
5.	Lethbridge (Cont.)	B. 12	Taber (Cont.)	170	Co-Operative Coal Co.	4,309	9,119
				180	J. J. Mills	319	285
				201	Lewis Oliver	514	516
				228	Regal Collieries	7,224	1,431
				377	G. S. Gibson & Son	644	762
				448	Louis Santoni	487	235
				669	Domestic Coal Co.	441	18
				672	Dominic Annon	1,201	883
				691	A. J. Cutland	310	307
				702	J. L. Melvin	84	94
				1140	Jules Lavenne	271	85
				399	John Roth	68	22
				838	A. Smith	38	52
				909	Dunn & Shawcross	1,146	910
				944	Z. A. Dunlop	54	....
				1003	V. Carraini	902	507
				1010	Henry Miller	713	388
				1031	Peter B. Barr	603	237
				1079	Barnwell Community Mine	446	446
				1097	Louis Domso	466	697
				1114	C. Lanz	....	95
				1122	Renfrew Coal Co.	....	3,347
				1124	Oliver Coal Co.	....	3,253
		B. 10	Milk River	179	Steve Balog	75	48
				271	Milk River Colliery Co.	552	940
				279	E. T. Davies	50	547
				381	T. E. Simpson	525	474
				881	F. W. Walters	1,345	1,398
				1105	Thomas Taylor	116	610
				1165	A. Beveridge	....	125
6.	Medicine Hat	B. 16	Empress				
		B. 13	Redcliff	165	Redcliff Brick & Coal Co., Ltd.	7,034	8,578

APPENDIX II. (*Continued*)

Division. No.	Division. Name.	Coal Area. No.	Coal Area. Name.	Mine. No.	Mine. Name.	Output 1923 (Tons)	Output 1924 (Tons)
6.	Medicine Hat (Cont.)	B. 13	Redcliff (Cont.)	772	Ajax Coal Co., Ltd.	13,727	39,749
		B. 11	Pakowki	341	Carlo Perini	908	441
				602	Walter Reville	441	356
				689	George Bragdich	694	736
				718	F. Rataushk	278	175
				903	Harry Last	398	475
				965	Comrey Coal Co.	396	407
				1138	Wm. Geddes	....	82
7.	Brooks	E. 11	Gleichen	72	Blackfoot Indians	1,822	204
				299	D. Medloski	566	595
				360	H. Castello	1,820	1,543
				857	Walker & Lee	2,055	1,593
				1111	Edward Evans	143	998
		E. 12	Champion	136	George Rhodes	982	969
				151	C. Farrell	1,131	1,713
				224	Fred Hetherington	553	166
				296	James Ashmore & Sons	1,099	1,190
				476	W. J. Douglas	1,502	1,602
				739	W. E. Watkins	606	371
				758	Alex. Fraser	1,872	1,636
				910	James Ellis	1,378	1,634
				1137	Smith & Popovich	....	395
				1139	R. E. Armstrong & E. Corkish	....	226
				1112	F. Hetherington (Abandoned)	....	31
		B. 15	Steveville	460	P. F. Clemens	590	560
				901	T. L. Bray	327	179
		B. 14	Brooks	226	Kleenbirn Collieries, Ltd.	5,731	4,092
				840	Kleenbirn Collieries, Ltd.	....	558

Division. No.	Division. Name.	Coal Area. No.	Coal Area. Name.	Mine. No.	Mine. Name.	Output 1923 (Tons)	Output 1924 (Tons)
7.	Brooks (Cont.)	B. 14	Brooks (Cont.)	915	George Ketchmark	296	180
				998	T. W. Kerrison	987	1,446
				1131	Kleenbirn Collieries, Ltd.	....	75
8.	Drumheller	E. 7	Big Valley	328	W. Burchell	604	637
				364	Big Valley Collieries, Ltd.	39,615	45,871
				471	C. M. Wooden	948	774
				495	Ole Thompson	191	90
				864	Vimy Coal, Light and Power Co., Ltd.	3,654	4,859
				920	John Prescott	183	139
				1021	Big Ton Coal & By-Product Co., Ltd.	41	1,406
				1179	Peter Murray	....	243
		E. 8	Carbon	53	Chris. Johnson	....	73
				113	Albert Trentham	479	564
				115	Peerless Carbon Collieries, Ltd.	10,436	57,229
				189	Aaron Balog	686	474
				194	Rene Vasseur	138	38
				384	Ellis Coal Co., Ltd.	24,698	43,896
				445	George Watson	231	45
				690	Henry Sward	1,378	1,406
				694	Joseph Hodgson	1,536	1,199
				423	T. & A. McKinley	459	194
				710	Peters & Kinchin	995	1,255
				749	H. D. Friend	1,086	5,323
				768	Shannon Coal Co., Ltd.	6,945	10,617
				817	H. Trentham	790	949
				811	Palisade Coal Co., Ltd.	13,934	25,064
				851	Peerless Carbon Coal Mines, Ltd.	29,649	29,817
				859	David Halbert	219	324
				904	A. P. Himmelman	761	1,430
				906	Stahl & Wurz	2,640	1,658
				921	Thomas McKinlay	2,268	1,786

APPENDIX II. (*Continued*)

Division. No.	Division. Name.	Coal Area. No.	Coal Area. Name.	Mine. No.	Mine. Name.	Output 1923 (Tons)	Output 1924 (Tons)
8.	Drumheller (Cont.)	E. 8	Carbon (Cont.)	958	Fife Coal Co., Ltd.	556	1,247
				1033	Robert Campbell	312	370
				1060	Alfred Fox	535	307
				1126	J. E. Seale	....	271
		E. 10	Drumheller	317	Newcastle Coal Co., Ltd.	103,984	67,962
				346	Rosedale Coal Co., Ltd.	97,298	80,372
				347	Rosedeer Coal Mining Co., Ltd.	91,223	66,220
				367	Midland Collieries, Ltd.	50,461	43,131
				402	J. D. Thomas Coal Co.	8,322	62,352
				436	Great West Coal Co., Ltd.	51,886	34,002
				464	Burton T. Brooks	1,536	2,530
				620	Alberta Block Coal Co., Ltd.	53,433	70,322
				640	Western Commercial Co., Ltd.	51,332	75,073
				643	Jewell Collieries, Ltd.	50,954	48,169
				675	J. N. Murray	334	431
				678	Western Gem Coal Co., Ltd.	73,096	50,752
				684	Atlas Coal Co., Ltd.	99,277	43,839
				695	Caledonian Collieries, Ltd.	9,544	34,265
				697	Standard Coal Co., Ltd.	8,168	131
				703	Excelsior Collieries, Ltd.	23,126	35,143
				734	Rosemont Coal Co., Ltd.	6,715	8,744
				737	S. Stucco & Co.	10,306	13,080
				764	J. E. Perry	....	15
				766	Moonlight Coal Co., Ltd.	2,526	26
				770	Partridge Coal Co., Ltd.	....	3,806
				776	Hy-Grade Coal Co. of Drumheller, Ltd.	121,295	82,106
				782	Alex. Johnson	1,435	2,951
				815	J. L. & Joe Debrinski	21	9
				816	Newcastle Jr. Mining Co., Ltd.	105,676	59,417
				819	Elgin Coal Co., Ltd.	85,501	62,825
				844	Ideal Coal Co., Ltd.	17,624	61,047
				848	Mid-West Collieries, Ltd.	60,480	55,287

Division. No.	Division. Name.	Coal Area. No.	Coal Area. Name.	Mine. No.	Mine. Name.	Output 1923 (Tons)	Output 1924 (Tons)
8.	Drumheller (Cont.)	E. 10	Drumheller (Cont.)	898	Gibson Collieries, Ltd.	38,888	9,684
				931	Robert Taylor	427	367
				974	Capital Collieries, Ltd.	3,920	13,093
				1008	William Watson	1,214	635
				1017	J. A. Rouse	53	493
				1115	Craig's Coal Co., Ltd.	....	24,186
				1117	Wm. Morrill	53	62
				1146	George Snarey	....	61
				1156	Fred McLellan	....	169
		E. 9	Sheerness	262	Commonwealth Coal Co., Ltd.	1,380	5,642
				354	A. Miller	798	1,065
				375	A. S. Jones	1,340	1,082
				443	W. J. Anderson	7,468	10,946
				477	John Masciangelo	445	847
				486	Fred Berg	1,155	673
				488	Robert Unsworth	199	244
				491	L. C. Treber	807	1,182
				496	Alfred Donald	719	1,197
				497	A. T. Morse	1,909	2,022
				611	L. Dafoe & Bros.	1,618	703
				646	James Bradshaw	1,058	982
				725	Mrs. M. M. Edmonson	323	69
				784	N. F. Engstrom	683	365
				862	James Wright	657	703
				907	Geo. Thomas	309	55
				919	F. C. Peters	75	4
				937	Beck & Caravaggio	152	489
				995	J. Warneboldt	6,306	12,940
				1039	Lawrence Anderson	1,711	1,103
				1075	W. B. Sinclair	427	62
				1184	N. F. Engstrom	....	63

APPENDIX II. (*Continued*)

Division. No.	Division. Name.	Coal Area. No.	Coal Area. Name.	Mine. No.	Mine. Name.	Output 1923 (Tons)	Output 1924 (Tons)
9.	Ardley	E. 6	Ardley	167	Ben Nevis Mines	466	434
				635	J. N. Blair	77	215
				731	Ed. Bray	4,504	1,952
				787	Ardley Hardite Collieries, Ltd.	1,345	6,713
				824	Challenger Coal Co.	1,582	516
				831	Ruby Glow Coal Co., Ltd.	....	1,055
				891	Robert Russell	....	5
				949	Geo. Paton	153	328
				951	C. C. McDermand	208	211
				957	Dennis U. Blair	....	47
				966	J. F. Burt	167	54
				969	James Blades	30	95
				986	Paul Ness	128	132
				1018	Robertson & Taylor	352	920
				1049	D. H. Fuller	251	114
				1071	A. E. Holt	102	127
				1125	C. N. Williamson	....	42
				1127	Mrs. E. Ness	....	133
				1130	J. L. Jones	....	37
				1135	Theo. Kurp	....	24
				1136	R. Carter	....	81
				1178	Lasseter & McDonald	....	45
		E. 5	Castor	212	Richard Ruscoe	1,098	1,729
				242	George Chambers	....	29
				245	Bish Bros. & LeGear	2,387	1,673
				251	John Tyrlik	524	457
				273	Davis & Green	177	131
				275	A. D. McCormack	1,259	2,320
				289	Armour Gray	846	1,001
				427	Ben Hronek	907	1,009
				447	James Bros.	1,657	1,451
				607	D. McDonald	260	260

Division. No.	Division. Name.	Coal Area. No.	Coal Area. Name.	Mine. No.	Mine. Name.	Output 1923 (Tons)	Output 1924 (Tons)
9.	Ardley (Cont.)	E. 5	Castor (Cont.)	615	G. H. Enders	1,103	922
				622	Clarence Fanning	128	212
				665	Rich & Bergren	186	78
				666	E. W. Simmons	950	1,446
				717	Dan Shaw	....	257
				719	A. Mitchison	97	185
				793	Albert Wisla	431	348
				807	S. J. Calvin	10	638
				828	J. J. King	322	20
				853	Arthur Mitchinson	315	67
				902	J. B. Remillard	3,843	3,062
				911	F. G. Meek	1,485	1,460
				945	A. McNeill	540	2,036
				948	C. E. Hanson	10	318
				952	Bohme Bros. & Gilles	798	619
				953	Martin Bros. & Robinson	1,225	830
				956	Muncy Bros.	1,211	1,191
				959	John Kerr	754	520
				1032	Campbell & Walton Bros.	1,178	869
				964	Bitterman, Vishoff & Cober	692	693
				1042	John Carlson	836	569
				1046	Louis Bulcourt	53	313
				1047	Nicholas Fry	166	393
				1062	Charles Strader	310	749
				1064	David James	65	1,405
				1102	A. Lindgren	260	265
				1163	Mrs. A. Karaus	....	199
				1180	Titus Card	....	132
				1181	B. Saunders & B. Gaush	....	66
10.	Pembina	E. 14	Whitecourt	1084	Albert Quist	....	20
				1100	Henry Bergmark	....	248
				1148	James Hammond	....	175

APPENDIX II. (*Continued*)

Division. No.	Division. Name.	Coal Area. No.	Coal Area. Name.	Mine. No.	Mine. Name.	Output 1923 (Tons)	Output 1924 (Tons)
10.	Pembina (Cont.)	E. 1	Pembina	227	North American Collieries	111,505	116,533
				419	Lakeside Coals, Ltd.	56,634	80,380
				1128	Wm. Heath	....	111
11.	Edmonton	B. 19	Rochester				
		E. 2	Edmonton	29	Mrs. A. G. Berube	1,538	927
				32	Canadian Coal Co., Ltd.	57,721	88,695
				43	Humberstone Mines, Ltd.	57,677	58,867
				46	Bush Mine Coal Co., Ltd.	60,036	64,916
				69	Keith & Fulton	5,435	4,118
				90	Fraser-McKay Collieries, Ltd.	76,651	77,854
				91	R. P. Ottewell	7,244	11,935
				99	Great West Coal Co., Ltd.	101,753	103,230
				101	Dickenson & Knight	....	149
				129	North Star Coal Co., Ltd.	14,210	20,244
				147	Penn Mines, Ltd. (Edmonton Collieries)	19,711	23,552
				155	Dawson Coal Co., Ltd.	16,837	19,036
				389	Frank Smith	543	615
				397	Kelly Collieries	922	1,229
				428	Sturgeon Valley Collieries, Ltd.	11,667	17,165
				632	Penn Mine Coal Co., Ltd.	71,573	81,274
				699	Marcus Coal Mines, Ltd.	81,100	76,194
				707	Mrs. A. J. Davidson	191	3,373
				868	Frank Chiarello	204	448
				869	Premier Coal Co., Ltd. (Reed & Brown)	15,440	15,053
				877	Thomas Nearney	333	348
				886	Ilko Sereda	28	171
				888	Magnus Pearson	171	28
				922	D. Falvo	313	170
				950	Fred Hook	308	294
				1022	Joseph Pickard & Co.	883	2,964
				1034	Kost Nimko	1,095	791
				1098	Wm. Eccleston	....	110
				1099	Foster, Senft & Oswald	274	1,035

Division. No.	Division. Name	Coal Area. No.	Coal Area. Name	Mine. No.	Mine. Name	Output 1923 (Tons)	Output 1924 (Tons)
11.	Edmonton (Cont.)	E. 2	Edmonton (Cont.)	1104	Thomas Mather	59	178
				1123	Chappen Terris	....	43
				1167	Geo. & Harry Booth	....	209
				1177	Steve Poholko	....	70
12.	Tofield	B. 18	Pakan				
		E. 3	Tofield	149	J. J. Devitt	781	441
				215	Chappell Coal Co., Ltd.	1,028	5,668
				252	Tofield Coal Co., Ltd.	88,574	89,883
				340	Dobell Coal Co., Ltd.	15,531	20,042
				1107	McKenzie Coal Co., Ltd.	300	3,508
				1143	M. D. Stutzman	....	84
				1172	Bardo Coal Co., Ltd.	....	185
		E. 4	Camrose	241	Spicer Coal Co., Ltd.	20,244	25,677
				244	Stoney Creek Collieries, Ltd.	6,589	8,229
				250	Round Hill Collieries, Ltd.	9,561	10,408
				374	Canadian Dinant Coal Co., Ltd.	29,215	30,799
				601	G. Law	760	480
				610	L. Strilczyk	....	309
				724	S. H. Burnstadt	3,976	468
				760	W. W. Casbeer	574	782
				971	Dan Colonel	428	526
				1101	W. H. Wall	....	128
				1166	National Collieries, Ltd.	....	3,667
		E. 13	Wetaskiwin	1186	S. D. McDermid	....	12
		B. 17	Wainwright	1174	J. W. Walker	....	160
13.	Peace River	B. 1	Halcourt	1118	James Howarth	87	69
				1119	S. Drociuck	106	329
				1120	Adolph Hugel	....	8
				1134	Grant Belangee	....	50
				1176	Wapiti Coal Co.	....	202
		B. 20	Sexsmith	1121	John Arac	458	123

APPENDIX VI.

Disposition of total output divided according to character of coal and coal mining divisions, showing destination of shipments and other disposition for the years 1917-1925. (*For the years* 1917, 1918 *and* 1919 *shipments to railroads are included in "Alberta," "Saskatchewan," etc. Sub-bituminous coal was not shown separately until the year* 1922.)

BITUMINOUS COAL

Division No. and Name	Alberta	British Columbia	Saskatchewan	Manitoba	Ontario	United States	Railroads	Making Coke	Used by Colliery Railroads	Under Colliery Boilers	Put to Stock	Briquettes	Put to Waste	Lifted from Stock	Lifted from Waste	Totals
1917—																
1. Crowsnest	757,856	46,446	123,888	63,862	.....	90,337	.....	51,905	.....	59,739	.....	.....	.....	720	.....	1,193,313
2. Canmore	164,441	4,438	12,001	1,398	.....	.....	.....	.....	.....	13,955	.....	.....	.....	.....	.....	196,233
3. Brazeau	260,126	.....	1,170	90	.....	.....	.....	.....	.....	5,511	.....	.....	.....	.....	.....	266,897
4. Mountain Park	456,531	3,151	37,628	33,689	.....	.....	.....	.....	.....	19,428	.....	.....	.....	.....	.....	550,427
	1,638,954	54,035	174,687	99,039	.....	90,337	.....	51,905	.....	98,633	.....	.....	.....	720	.....	2,206,870
1918—																
1. Crowsnest	1,119,358	56,761	114,670	62,057	.....	130,082	.....	53,462	.....	60,651	8,861	.....	3,221	7,637	.....	1,601,486
2. Canmore	242,583	6,541	9,490	662	.....	.....	.....	.....	.....	15,408	25	.....	.....	.....	.....	274,709
3. Brazeau	359,877	.....	4,447	2,157	.....	.....	.....	.....	.....	5,991	.....	.....	170	1,081	.....	371,561
4. Mountain Park	497,975	5,861	144,588	55,256	185	.....	.....	.....	.....	27,618	.....	.....	3,094	.....	.....	734,577
	2,219,793	69,163	273,195	120,132	185	130,082	.....	53,462	.....	109,668	8,886	.....	6,485	8,718	.....	2,982,333
1919—																
1. Crowsnest	880,755	43,812	88,264	9,527	.....	114,409	.....	.....	.....	46,162	6,754	.....	3,073	4,746	44	1,187,966
2. Canmore	173,611	4,866	7,529	79	.....	.....	.....	.....	.....	15,774	75	.....	10	53	.....	201,891
3. Brazeau	285,330	.....	16,432	1,016	60	.....	.....	.....	.....	6,152	.....	.....	.....	.....	.....	308,990
4. Mountain Park	423,482	8,589	133,489	31,025	.....	.....	.....	.....	.....	24,007	69	.....	5,434	45	10	626,940
	1,763,178	57,267	245,714	41,647	60	114,409	.....	.....	.....	92,095	6,898	.....	8,517	4,844	54	2,325,787
1920—																
1. Crowsnest	131,836	42,229	105,886	101,438	530	115,415	1,200,886	.....	.....	73,918	4,140	.....	5,136	5,707	178	1,775,529
2. Canmore	15,710	1,886	9,119	1,238	.....	.....	231,799	.....	.....	15,689	2,425	.....	.....	2,355	.....	275,511
3. Brazeau	36,635	2,573	15,669	12,806	.....	.....	379,433	.....	.....	9,287	4,681	.....	90	4,759	.....	456,415
4. Mountain Park	82,044	22,987	40,535	27,720	100	.....	694,389	.....	.....	38,203	747	.....	5,069	194	34	911,566
	266,225	69,675	171,209	143,202	630	115,415	2,506,507	.....	.....	137,097	11,993	.....	10,295	13,015	212	3,419,021
1921—																
1. Crowsnest	110,707	20,120	74,351	34,197	2,977	100,300	860,102	.....	.....	64,084	11,313	.....	2,499	8,208	261	1,272,181
2. Canmore	18,050	1,770	5,282	158	.....	.....	165,924	.....	.....	14,663	6,641	.....	.....	6,221	.....	206,267
3. Brazeau	19,393	60	8,278	14,230	30	30	426,384	.....	.....	10,758	5,511	.....	.....	4,939	.....	479,735
4. Mountain Park	61,784	39,760	196,104	37,963	63	.....	564,034	.....	.....	32,751	6,665	.....	3,423	3,335	15	939,197
	209,934	61,710	284,015	86,548	3,070	100,330	2,016,444	.....	.....	122,256	30,130	.....	5,922	22,703	276	2,897,380
1922—																
1. Crowsnest	88,159	10,386	54,770	11,757	92	86,640	732,770	.....	.....	42,609	7,302	.....	1,755	9,659	.....	1,026,581
2. Canmore	10,206	221	1,794	174	.....	.....	144,713	.....	.....	12,423	2,559	.....	.....	2,642	.....	169,448
3. Brazeau	6,141	.....	37	.....	.....	.....	308,907	.....	.....	6,554	1,270	.....	.....	1,439	.....	321,470
4. Mountain Park	6,276	11,820	157,668	9,122	34	.....	492,702	.....	.....	26,866	425	.....	.....	8,139	.....	696,774
	110,782	22,427	214,269	21,053	126	86,640	1,679,092	.....	.....	88,452	11,556	.....	1,755	21,879	.....	2,214,273
1923—																
1. Crowsnest	86,080	12,040	60,006	4,017	.....	62,254	1,330,874	.....	644	42,330	7,655	.....	4,709	4,588	5,365	1,600,656
2. Canmore	10,105	1,447	3,514	2,587	.....	.....	231,588	.....	625	14,629	4,375	410	.....	4,833	.....	264,447
3. Brazeau	2,967	.....	142	287	.....	.....	482,665	.....	.....	7,867	2,150	.....	.....	2,700	.....	493,378
4. Mountain Park	5,961	9,857	6,303	3,134	.....	.....	815,801	.....	2,424	28,366	11,987	.....	.....	700	.....	883,133
	105,113	23,344	69,965	10,025	.....	62,254	2,860,928	.....	3,693	93,192	26,167	410	4,709	12,821	5,365	3,241,614
1924—																
1. Crowsnest	58,979	19,620	45,656	3,177	.....	26,754	730,573	.....	322	24,421	12,803	.....	1,976	11,617	.....	912,664
2. Canmore	6,801	405	995	756	10	.....	112,172	.....	297	12,374	2,915	.....	.....	1,898	.....	134,827
3. Brazeau	1,585	.....	.....	.....	.....	.....	169,711	.....	.....	3,477	650	.....	.....	651	.....	174,772
4. Mountain Park	3,572	6,267	4,098	1,520	.....	23	268,543	.....	290	14,193	10,619	.....	.....	16,281	.....	292,844
	70,937	26,292	50,749	5,453	10	26,777	1,280,999	.....	909	54,465	26,987	.....	1,976	30,447	.....	1,515,107
1925—																
1. Crowsnest	72,548	22,774	48,439	17,195	.....	23,089	915,898	.....	475	29,150	14,106	.....	2,609	13,983	.....	1,132,300
2. Canmore	7,384	463	1,535	273	.....	34	150,374	.....	431	12,797	3,166	729	.....	3,607	.....	173,579
3. Brazeau	2,111	.....	33	.....	.....	.....	208,206	.....	.....	6,565	1,393	.....	.....	1,464	.....	216,844
4. Mountain Park	8,164	10,272	5,593	758	.....	.....	575,674	.....	1,075	23,383	3,132	.....	.....	5,574	.....	622,477
	90,207	33,509	55,600	18,226	.....	23,123	1,850,152	.....	1,981	71,895	21,797	729	2,609	24,628	.....	2,145,200

SUB-BITUMINOUS COAL

Division No. and Name	Alberta	British Columbia	Saskatchewan	Manitoba	Ontario	United States	Railroads	Making Coke	Used by Colliery Railroads	Under Colliery Boilers	Put to Stock	Briquettes	Put to Waste	Lifted from Stock	Lifted from Waste	Totals
1922—																
1. Crowsnest	9,829	558	123	.....	.....	301	.....	.....	.....	20	9	.....	46	36	.....	10,850
2. Canmore	2,121	.....	.....	.....	.....	.....	.....	.....	.....	61	103	.....	440	.....	.....	2,725
3. Brazeau	23,969	727	23,923	20,638	393	50	.....	.....	.....	4,791	631	.....	.....	688	.....	74,434
4. Mountain Park	51,055	13,279	27,292	42,344	405	.....	394,944	.....	.....	9,415	656	.....	9,053	1,379	.....	547,064
	86,974	14,564	51,338	62,982	798	351	394,944	.....	.....	14,287	1,399	.....	9,539	2,103	.....	635,073
1923—																
1. Crowsnest	7,039	792	1,389	47	.....	94	.....	.....	.....	83	.....	.....	.....	.....	.....	9,444
2. Canmore	2,984	.....	.....	.....	.....	.....	.....	.....	.....	75	44	.....	45	.....	.....	3,148
3. Brazeau	21,439	1,821	16,300	28,396	509	.....	.....	.....	.....	4,715	662	.....	137	547	137	73,295
4. Mountain Park	23,363	11,738	10,852	31,988	1,050	28	249,193	.....	2,683	7,723	4,670	.....	35,271	985	.....	377,574
	54,825	14,351	28,541	60,431	1,559	122	249,193	.....	2,683	12,596	5,376	.....	35,453	1,532	137	463,461
1924—																
1. Crowsnest	11,311	461	827	.....	.....	.....	.....	.....	.....	21	20	.....	40	.....	.....	12,680
2. Canmore	3,806	.....	.....	.....	.....	.....	.....	.....	.....	137	.....	.....	727	.....	.....	4,670
3. Brazeau	22,554	1,792	22,158	17,238	279	.....	.....	.....	.....	4,502	855	.....	.....	832	.....	68,546
4. Mountain Park	35,691	9,346	31,654	44,567	279	63	332,575	.....	3,193	7,724	17,644	.....	24,063	749	.....	506,050
	73,362	11,599	54,639	61,805	558	63	332,575	.....	3,193	12,384	18,519	.....	24,830	1,581	.....	591,946
1925—																
1. Crowsnest	1,957	30	30	.....	.....	.....	.....	.....	.....	.....	43	.....	37	.....	.....	2,097
2. Canmore	4,109	.....	.....	.....	.....	.....	.....	.....	.....	63	113	.....	301	20	.....	4,566
3. Brazeau	31,927	2,464	29,859	14,531	2,222	.....	.....	.....	.....	5,773	1,276	.....	.....	1,283	.....	86,769
4. Mountain Park	25,990	12,832	33,270	69,304	646	34	289,564	.....	3,169	13,567	3,130	.....	38,377	1,480	.....	488,403
	63,983	15,326	63,159	83,835	2,868	34	289,564	.....	3,169	19,403	4,562	.....	38,715	2,783	.....	581,835

LIGNITE COAL—*Continued.*

Division No. and Name	Alberta	British Columbia	Saskatchewan	Manitoba	Ontario	Quebec	United States	Used under Colliery Boilers	Used by Coll. Railroads	Put to Stock	Put to Waste	Lifted from Stock	Lifted from Waste	Totals
1922—														
5. Lethbridge	171,645	28,107	318,353	52,257	1,393	.....	11,010	76,003	.....	9,845	14,678	34,682	.....	648,609
6. Medicine Hat	8,300	33	20,028	433	.....	.....	2,173	952	.....	.....	952	.....	.....	32,871
7. Brooks	27,144	.....	.....	.....	.....	.....	.....	328	.....	.....	197	.....	.....	27,669
8. Drumheller	357,989	20,090	587,852	313,663	10,465	.....	4,704	41,503	.....	3,576	19,918	3,171	216	1,356,373
9. Ardley	36,859	.....	1,197	32	.....	.....	.....	.....	.....	.....	2,446	.....	3	40,531
10. Pembina	42,628	18,292	33,545	33,977	7,708	.....	502	11,662	.....	1,581	5,058	1,712	.....	153,241
11. Edmonton	510,282	3,119	83,399	27,213	1,018	102	64	33,325	.....	185	6,131	185	225	664,428
12. Tofield	89,149	60	60,472	8,898	65	.....	.....	2,076	.....	11	2,796	.....	580	162,947
	1,243,996	69,701	1,104,846	436,473	20,649	102	18,453	165,849	.....	15,198	52,176	39,750	1,024	3,086,669
1923—														
5. Lethbridge	175,034	27,074	348,571	54,347	2,768	.....	8,378	73,915	1,547	18,580	11,298	16,577	7,723	697,212
6. Medicine Hat	6,309	354	13,844	633	.....	.....	898	163	.....	110	607	.....	.....	22,918
7. Brooks	27,522	.....	.....	.....	.....	.....	.....	189	.....	35	356	.....	.....	28,102
8. Drumheller	368,802	15,094	577,869	367,242	26,696	.....	11,472	43,332	219	1,257	11,512	1,670	4	1,421,821
9. Ardley	26,756	.....	811	32	.....	.....	.....	.....	.....	290	1,222	.....	2	29,109
10. Pembina	37,131	27,176	40,477	27,382	17,832	.....	.....	12,674	.....	2,092	5,356	1,981	.....	168,139
11. Edmonton	504,653	933	62,036	17,290	3,318	.....	433	26,752	.....	105	1,188	.....	461	616,247
12. Tofield	75,990	.....	81,340	16,257	161	.....	.....	2,711	.....	50	2,834	561	1,240	177,542
13. Peace River	651	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	651
	1,222,848	70,631	1,124,948	483,183	50,775	.....	21,181	159,736	1,766	22,519	34,373	20,789	9,430	3,161,741
1924—														
5. Lethbridge	143,572	25,938	231,633	32,631	2,081	.....	7,056	46,867	516	18,913	12,036	9,683	.....	511,560
6. Medicine Hat	18,765	3,723	23,972	1,985	.....	.....	1,115	.....	.....	.....	643	.....	.....	50,203
7. Brooks	26,376	60	.....	.....	.....	.....	.....	187	.....	.....	521	.....	.....	27,144
8. Drumheller	402,147	21,999	616,480	302,477	7,731	.....	3,507	35,948	.....	2,382	9,951	324	545	1,401,753
9. Ardley	28,627	42	667	486	.....	.....	.....	4	.....	55	1,140	10	.....	31,011
10. Pembina	62,842	23,869	48,242	36,089	2,386	.....	97	14,767	.....	3,248	8,928	3,176	.....	197,292
11. Edmonton	521,714	591	81,953	38,058	3,694	.....	527	27,674	.....	.....	1,074	.....	.....	675,285
12. Tofield	82,035	73	81,453	31,423	65	.....	.....	3,102	.....	.....	3,420	.....	115	201,456
13. Peace River	916	.....	.....	.....	.....	.....	.....	.....	.....	.....	40	.....	.....	956
	1,286,994	76,295	1,084,400	443,149	15,957	.....	12,302	128,549	516	24,598	37,753	13,193	660	3,096,660
1925—														
5. Lethbridge	202,810	27,507	365,101	69,340	2,640	.....	11,665	61,998	959	19,792	15,439	18,375	794	758,082
6. Medicine Hat	14,548	1,000	26,446	3,789	.....	.....	686	.....	.....	20	803	.....	.....	47,292
7. Brooks	20,894	.....	.....	.....	.....	.....	.....	81	.....	.....	445	.....	.....	21,420
8. Drumheller	406,952	19,281	590,316	257,804	10,032	.....	4,796	36,678	.....	5,529	9,509	2,724	1,022	1,337,161
9. Ardley	42,963	34	1,725	224	.....	.....	.....	352	.....	406	1,418	437	.....	46,685
10. Pembina	62,697	20,184	53,423	22,567	9,266	.....	66	13,092	.....	2,766	3,287	2,476	.....	184,872
11. Edmonton	448,540	196	59,616	17,210	3,053	.....	137	18,534	.....	66	951	.....	.....	548,303
12. Tofield	85,680	.....	82,267	36,660	972	.....	.....	3,531	15	58	3,014	335	66	211,796
13. Peace River	748	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	748
	1,285,842	68,202	1,178,894	407,594	25,963	.....	17,350	134,266	974	28,637	34,866	24,347	1,882	3,156,359

Division No. and Name	LIGNITE COAL													
	Alberta	British Columbia	Saskatchewan	Manitoba	Ontario	Quebec	United States	Used under Colliery Boilers	Used by Coll. Railroads	Put to Stock	Put to Waste	Lifted from Stock	Lifted from Waste	Totals
1917—														
5. Lethbridge	257,397	15,229	381,329	57,073	.....	.....	1,293	88,833	.....	.....	18,163	.....	.....	819,317
6. Medicine Hat	3,942	.....	8,440	552	.....	.....	1,042	55	.....	.....	815	.....	.....	14,846
7. Brooks	16,056	.....	.....	.....	.....	.....	.....	30	.....	.....	632	.....	.....	16,718
8. Drumheller	240,491	1,913	391,740	65,025	.....	.....	138	31,845	.....	.....	29,406	.....	.....	760,558
9. Ardley	26,743	.....	151	30	.....	.....	.....	20	.....	.....	1,823	.....	.....	28,767
10. Pembina	51,760	367	33,719	6,132	.....	.....	.....	6,873	.....	.....	4,505	.....	.....	103,356
11. Edmonton	459,474	1,289	118,012	20,333	.....	.....	.....	32,855	.....	.....	29,278	.....	.....	661,241
12. Tofield	96,682	.....	26,059	1,365	.....	.....	.....	2,377	.....	.....	6,320	.....	.....	132,803
13. Peace River	223	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	223
	1,152,768	18,798	959,450	150,510	.....	.....	2,473	162,888	.....	.....	90,942	.....	.....	2,537,829
1918—														
5. Lethbridge	272,425	17,963	483,050	121,457	206	.....	1,119	97,620	.....	.....	66,450	.....	.....	1,060,290
6. Medicine Hat	5,371	.....	9,667	1,677	.....	.....	1,524	21	.....	.....	768	.....	.....	19,028
7. Brooks	17,820	.....	.....	.....	.....	.....	.....	.....	.....	.....	602	.....	.....	18,422
8. Drumheller	258,150	3,895	454,240	207,987	172	.....	511	45,413	.....	.....	30,791	.....	.....	1,001,159
9. Ardley	24,954	.....	789	124	.....	.....	.....	113	.....	.....	1,424	.....	.....	27,404
10. Pembina	52,388	4,123	32,092	25,171	.....	.....	.....	7,332	.....	.....	7,539	.....	.....	128,645
11. Edmonton	491,662	841	82,712	27,416	32	.....	.....	41,383	.....	.....	15,380	.....	.....	659,426
12. Tofield	84,649	27	28,994	3,896	.....	.....	.....	2,266	.....	.....	2,819	.....	.....	122,651
	1,207,419	26,849	1,091,544	387,728	410	.....	3,154	194,148	.....	.....	125,773	.....	.....	3,037,025
1919—														
5. Lethbridge	210,441	19,575	323,936	62,223	114	.....	6,437	78,892	.....	12,780	23,523	7,921	3,792	726,208
6. Medicine Hat	5,481	.....	14,340	962	.....	.....	.....	11	.....	58	1,697	.....	3	22,546
7. Brooks	16,054	180	.....	.....	.....	.....	.....	12	.....	.....	401	25	10	16,612
8. Drumheller	303,633	7,356	405,440	148,921	134	.....	259	39,235	.....	2,823	19,095	1,611	5,534	919,751
9. Ardley	27,989	.....	33	.....	.....	.....	.....	3	.....	311	1,149	105	.....	29,380
10. Pembina	59,514	5,565	28,889	36,055	.....	.....	.....	8,588	.....	1,358	3,752	1,354	288	142,079
11. Edmonton	471,559	296	44,749	17,533	.....	.....	.....	33,565	.....	191	5,349	.....	.....	573,242
12. Tofield	124,369	139	48,311	4,743	.....	.....	.....	2,058	.....	143	2,139	51	720	181,131
	1,219,040	33,111	865,698	270,437	248	.....	6,696	162,364	.....	17,664	57,105	11,067	10,347	2,610,949
1920—														
5. Lethbridge	255,144	24,713	447,506	99,377	3,268	.....	36,839	102,467	.....	14,461	35,476	13,323	2,151	1,003,777
6. Medicine Hat	5,826	.....	6,514	1,566	.....	.....	117	162	.....	20	737	126	.....	14,816
7. Brooks	23,735	.....	.....	.....	.....	.....	.....	11	.....	70	289	76	.....	24,029
8. Drumheller	367,115	13,549	574,810	304,572	9,650	30	937	51,303	.....	5,339	31,040	2,345	2,076	1,355,316
9. Ardley	27,257	.....	.....	67	.....	.....	.....	.....	.....	20	718	38	.....	26,632
10. Pembina	85,076	14,176	26,716	34,829	198	.....	.....	9,844	.....	2,152	5,773	2,203	.....	176,561
11. Edmonton	523,710	1,678	43,860	13,197	101	.....	.....	44,935	.....	466	4,856	325	40	632,438
12. Tofield	82,650	.....	35,010	2,796	64	.....	.....	2,766	.....	.....	2,523	.....	16	125,793
13. Peace River	72	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	72
	1,370,585	54,116	1,134,416	456,404	13,281	30	37,893	211,488	.....	22,528	81,412	18,436	4,283	3,359,434
1921—														
5. Lethbridge	199,155	25,670	397,376	91,150	2,075	.....	31,851	94,584	.....	27,518	20,766	36,299	11,992	841,854
6. Medicine Hat	6,491	.....	8,659	41	.....	.....	412	548	.....	.....	657	.....	.....	16,808
7. Brooks	24,502	223	.....	.....	.....	.....	.....	124	.....	450	496	66	.....	25,729
8. Drumheller	309,085	12,339	485,082	266,666	3,957	.....	822	49,621	.....	7,902	22,145	6,692	3,398	1,147,529
9. Ardley	33,275	.....	166	.....	.....	.....	.....	.....	.....	59	1,068	30	.....	34,538
10. Pembina	56,857	12,927	44,702	28,966	205	.....	.....	13,285	.....	3,553	6,222	3,152	.....	163,565
11. Edmonton	495,973	595	40,115	15,590	591	.....	.....	38,692	.....	50	2,658	139	302	593,823
12. Tofield	74,464	150	31,088	6,043	.....	.....	.....	2,642	.....	.....	5,125	.....	.....	119,512
	1,199,802	51,904	1,007,188	408,456	6,828	.....	33,085	199,496	.....	39,532	59,137	46,378	15,692	2,943,358

APPENDIX XI.

Detailed maximum, minimum and average costs, revenues and profits or losses of certain reporting bituminous and lignite mines.

Part A. of this Appendix deals with all the reporting bituminous mines of the province and Part B. with all the reporting lignite mines of Divisions 8 and 9 (Drumheller and Ardley). In both cases, the figures opposite each item of cost are for those mines only which show this item as such in their statements. See body of Report (chapter V) for full explanations.

"Underground and Surface Costs," "Total Cost," and "Total Revenue" apply to all mines; but, because all mines do not show all the other items separately so that they could be averaged over the whole tonnage, the average of these separate items will not add up to equal the average totals. The average figures for net profit or net loss, as the case may be, agree with the averages shown in the body of the Report, which also gives the respective tonnages involved.

Bituminous mines: Divisions 1, 2, 3 and 4, Crowsnest, Canmore, Brazeau and Mountain Park.

1921

ITEM—	Minimum of Mines Showing This Item	Maximum of Mines Showing This Item	Average of Mines Showing This Item
	Per Ton	Per Ton	Per Ton
Underground Labor—Mine Officials	$ .03	$ .21	$ .14
" " Other Employees	1.60	2.66	2.06
Underground—Material and Supplies	.29	.88	.38
Surface Labor—Mine Officials	.01	.14	.06
" " Other Employees	.29	.84	.59
Surface—Material and Supplies	.02	.51	.12
Power Purchased	.16	.20	.19
Cost of your own coal used in colliery	.09	.35	.21
Total underground and surface costs as above	$3.09	$4.96	$3.55
Administration, office and selling expense	.11	.44	.20
Rentals	.01	.07	.02
Royalty—Dominion Government	.03	.07	.05
Royalty	.20	.20	.20
Alberta Government Coal Tax	.05	.05	.05
Other Taxes	.01	.10	.04
Workmen's Compensation	.03	.08	.04
Interest	.02	.09	.04
Insurance	.01	.05	.02
Reserves for Contingencies	.03	.05	.04
Other Reserves	.10	.10	.10
Depreciation	.18	.43	.23
Amortization of Development	.03	.10	.08
Depletion	.06	.18	.10
Miscellaneous	.01	.31	.05
Interest on Adjusted Capital	.31	1.47	.53
Total Cost	$4.37	$6.49	$4.96
Value f.o.b. Mine of Merchantable or Disposable Coal produced	$4.90	$5.56	$5.09
Value of Coal used at Colliery	.09	.35	.21
Other Revenue	.04	.29	.11
Total Revenue	$5.00	$5.81	$5.32
Gross Profit	$ .13	$ .78	$ .58
Gross Loss	.36	1.28	.74
Government Income Tax	.01	.12	.08
Net Profit	$ .07	$ .70	$ .49
Net Loss	.37	1.31	.75

Bituminous mines: Divisions 1, 2, 3 and 4, Crowsnest, Canmore, Brazeau and Mountain Park.

1922

ITEM—	Minimum of Mines Showing This Item	Maximum of Mines Showing This Item	Average of Mines Showing This Item
	Per Ton	Per Ton	Per Ton
Underground Labor—Mine Officials	$ .05	$ .34	$ .15
" " Other Employees	1.45	3.02	2.01
Underground—Material and Supplies	.22	.76	.37
Surface Labor—Mine Officials	.01	.12	.07
" " Other Employees	.28	.91	.54
Surface—Material and Supplies	.04	.24	.09
Power Purchased	.04	.34	.12
Cost of your own coal used in colliery	.04	.53	.19
Total underground and surface costs as above	$2.89	$5.84	$3.55
Administration, office and selling expense	.11	.66	.26
Rentals	.01	.08	.03
Royalty—Dominion Government	.03	.07	.05
Royalty	.20	.20	.20
Alberta Government Coal Tax	.05	.09	.07
Other Taxes	.01	.13	.05
Workmen's Compensation	.04	.12	.07
Interest	.01	.10	.05
Insurance	.01	.07	.03
Reserves for Contingencies	.03	.07	.04
Other Reserves	.05	.10	.08
Depreciation	.15	.55	.26
Amortization of Development	.03	.10	.07
Depletion	.05	.18	.11
Miscellaneous	.01	.23	.09
Interest on Adjusted Capital	.30	1.15	.61
Total Cost	$4.32	$7.73	$5.21
Value f.o.b. Mine of Merchantable or Disposable Coal produced	$4.45	$5.19	$4.90
Value of Coal used at Colliery	.04	.53	.19
Other Revenue	.04	.29	.13
Total Revenue	$4.81	$5.70	$5.15
Gross Profit	$ .01	$ .59	$ .37
Gross Loss	.01	2.04	.37
Government Income Tax	.03	.12	.07
Net Profit	$ .18	$ .47	$ .35
Net Loss	.06	2.04	.38

Bituminous mines: Divisions 1, 2, 3 and 4, Crowsnest, Canmore, Brazeau and Mountain Park.

1923

ITEM—	Minimum of Mines Showing This Item	Maximum of Mines Showing This Item	Average of Mines Showing This Item
	Per Ton	Per Ton	Per Ton
Underground Labor—Mine Officials	$ .04	$ .23	$ .12
" " Other Employees	1.61	2.67	2.01
Underground—Material and Supplies	.18	.66	.29
Surface Labor—Mine Officials	.01	.09	.05
" " Other Employees	.27	1.04	.48
Surface—Material and Supplies	.04	.34	.10
Power Purchased	.04	.21	.12
Cost of your own coal used in colliery	.04	.24	.14
Total underground and surface costs as above	$2.81	$4.51	$3.35
Administration, office and selling expense	.07	.37	.18
Rentals	.01	.08	.02
Royalty—Dominion Government	.01	.07	.05
Royalty	.20	.20	.20
Alberta Government Coal Tax	.01	.05	.04
Other Taxes	.02	.07	.04
Workmen's Compensation	.03	.12	.07
Interest	.01	.05	.02
Insurance	.01	.05	.02
Reserves for Contingencies	.04	.04	.04
Other Reserves	.02	.12	.06
Depreciation	.10	.31	.19
Amortization of Development	.04	.12	.07
Depletion	.05	.18	.11
Miscellaneous	.02	.13	.06
Interest on Adjusted Capital	.33	.49	.42
Total Cost	$3.67	$6.25	$4.53
Value f.o.b. Mine of Merchantable or Disposable Coal produced	$4.41	$5.13	$4.69
Value of Coal used at Colliery	.04	.24	.14
Other Revenue	.03	.34	.11
Total Revenue	$4.51	$5.55	$4.87
Gross Profit	$ .14	$ .87	$ .51
Gross Loss	.29	.70	.45
Government Income Tax	.01	.15	.09
Net Profit	$ .07	$ .72	$ .41
Net Loss	.31	.70	.45

Bituminous mines: Divisions 1, 2, 3 and 4, Crowsnest, Canmore, Brazeau and Mountain Park.

1924

ITEM—	Minimum of Mines Showing This Item	Maximum of Mines Showing This Item	Average of Mines Showing This Item
	Per Ton	Per Ton	Per Ton
Underground Labor—Mine Officials	$ .05	$ .53	$ .23
" " Other Employees	1.55	2.74	2.05
Underground—Material and Supplies	.31	.91	.37
Surface Labor—Mine Officials	.04	.17	.11
" " Other Employees	.24	.94	.48
Surface—Material and Supplies	.02	.17	.08
Power Purchased	.08	.15	.10
Cost of your own coal used in colliery	.09	.19	.12
Total underground and surface costs as above	$2.80	$4.81	$3.47
Administration, office and selling expense	.24	.44	.32
Rentals	.01	.17	.04
Royalty—Dominion Government	.01	.07	.04
Royalty	.20	.20	.20
Alberta Government Coal Tax	.05	.05	.05
Other Taxes	.01	.14	.08
Workmen's Compensation	.04	.12	.08
Interest	.01	.12	.04
Insurance	.01	.10	.04
Reserves for Contingencies	.08	.08	.08
Other Reserves	.05	.10	.08
Depreciation	.14	.79	.35
Amortization of Development	.07	.10	.09
Depletion	.05	.19	.08
Miscellaneous	.01	.41	.11
Interest on Adjusted Capital	.55	1.38	.90
Total Cost	$4.74	$7.17	$5.62
Value f.o.b. Mine of Merchantable or Disposable Coal produced	$4.29	$5.00	$4.54
Value of Coal used at Colliery	.09	.19	.12
Other Revenue	.06	.47	.19
Total Revenue	$4.44	$5.24	$4.82
Gross Profit	$ .42	$ .42	$ .42
Gross Loss	.41	1.93	1.02
Government Income Tax	.01	.14	.06
Net Profit	$ .28	$ .28	$ .29
Net Loss	.43	1.93	1.04

Lignite mines, Group "B," Divisions 8 and 9, Drumheller and Ardley.

1921

ITEM—	Minimum of Mines Showing This Item	Maximum of Mines Showing This Item	Average of Mines Showing This Item
	Per Ton	Per Ton	Per Ton
Underground Labor—Mine Officials	$ .04	$ .32	$ .09
" " Other Employees	1.86	2.87	2.22
Underground—Material and Supplies	.05	.50	.30
Surface Labor—Mine Officials	.04	.41	.18
" " Other Employees	.36	1.28	.66
Surface—Material and Supplies	.03	.24	.11
Power Purchased	.01	.15	.06
Cost of your own coal used in colliery	.02	.05	.03
Total underground and surface costs as above	$2.33	$5.14	$3.40
Administration, office and selling expense	.08	.87	.34
Rentals	.02	.15	.08
Royalty—Dominion Government	.05	.05	.05
Royalty	.03	.39	.23
Alberta Government Coal Tax	.04	.05	.04
Other Taxes	.01	.04	.02
Workmen's Compensation	.02	.07	.05
Interest	.01	.07	.03
Insurance	.01	.06	.03
Reserves for Contingencies	....	....	....
Other Reserves	....	....	....
Depreciation	.04	.31	.15
Amortization of Development	.07	.07	.07
Depletion	.03	.21	.11
Miscellaneous	.01	.38	.11
Interest on Adjusted Capital	.06	.31	.20
Total Cost	$3.63	$6.25	$4.45
Value f.o.b. Mine of Merchantable or Disposable Coal produced	$3.83	$5.19	$4.44
Value of Coal used at Colliery	.01	.05	.03
Other Revenue	.04	.38	.14
Total Revenue	$4.00	$5.62	$4.52
Gross Profit	$ .12	$ .73	$ .45
Gross Loss	.07	.63	.42
Government Income Tax	.01	.10	.05
Net Profit	$ .11	$ .68	$ .40
Net Loss	.08	.63	.42

Lignite mines, Group "B," Divisions 8 and 9, Drumheller and Ardley.

1922

ITEM—	Minimum of Mines Showing This Item	Maximum of Mines Showing This Item	Average of Mines Showing This Item
	Per Ton	Per Ton	Per Ton
Underground Labor—Mine Officials	$ .02	$ .13	$ .06
" " Other Employees	1.68	2.92	2.15
Underground—Material and Supplies	.04	.25	.23
Surface Labor—Mine Officials	.03	.31	.14
" " Other Employees	.23	.78	.44
Surface—Material and Supplies	.03	.21	.09
Power Purchased	.02	.09	.05
Cost of your own coal used in colliery	.01	.03	.02
Total underground and surface costs as above	$2.19	$4.28	$2.80
Administration, office and selling expense	.04	.98	.31
Rentals	.03	.11	.06
Royalty—Dominion Government	.05	.05	.05
Royalty	.03	.35	.23
Alberta Government Coal Tax	.04	.09	.06
Other Taxes	.01	.04	.03
Workmen's Compensation	.02	.08	.05
Interest	.01	.06	.02
Insurance	.01	.05	.02
Reserves for Contingencies	....	....	....
Other Reserves	.19	.19	.19
Depreciation	.02	.31	.13
Amortization of Development	.02	.09	.06
Depletion	.03	.19	.10
Miscellaneous	.02	.51	.10
Interest on Adjusted Capital	.04	.23	.15
Total Cost	$3.37	$5.27	$3.94
Value f.o.b. Mine of Merchantable or Disposable Coal produced	$3.55	$4.55	$4.03
Value of Coal used at Colliery	.01	.03	.02
Other Revenue	.01	.41	.15
Total Revenue	$3.55	$4.97	$4.16
Gross Profit	$ .15	$1.14	$ .53
Gross Loss	.07	.42	.26
Government Income Tax	.03	.13	.06
Net Profit	$ .12	$1.01	$ .47
Net Loss	.07	.42	.26

Lignite mines, Group "B," Divisions 8 and 9, Drumheller and Ardley.

1923

ITEM—	Minimum of Mines Showing This Item	Maximum of Mines Showing This Item	Average of Mines Showing This Item
	Per Ton	Per Ton	Per Ton
Underground Labor—Mine Officials	$ .03	$ .19	$ .06
" " Other Employees	1.68	2.83	2.06
Underground—Material and Supplies	.05	.28	.21
Surface Labor—Mine Officials	.03	.48	.14
" " Other Employees	.28	.78	.46
Surface—Material and Supplies	.02	.16	.07
Power Purchased	.02	.10	.06
Cost of your own coal used in colliery	.02	.03	.02
Total underground and surface costs as above	$1.92	$4.28	$2.82
Administration, office and selling expense	.03	.67	.26
Rentals	.04	.11	.07
Royalty—Dominion Government	.04	.05	.05
Royalty	.03	.35	.23
Alberta Government Coal Tax	.03	.09	.05
Other Taxes	.02	.05	.03
Workmen's Compensation	.03	.10	.06
Interest	.01	.06	.02
Insurance	.01	.05	.02
Reserves for Contingencies	....	....	....
Other Reserves	....	....	....
Depreciation	.03	.30	.13
Amortization of Development	.02	.03	.02
Depletion	.03	.10	.09
Miscellaneous	.01	.19	.06
Interest on Adjusted Capital	.04	.25	.13
Total Cost	$3.01	$5.17	$3.74
Value f.o.b. Mine of Merchantable or Disposable Coal produced	$3.47	$4.37	$3.76
Value of Coal used at Colliery	.02	.03	.02
Other Revenue	.02	.40	.12
Total Revenue	$3.47	$4.75	$3.90
Gross Profit	$ .04	$ .82	$ .49
Gross Loss	.02	.70	.35
Government Income Tax	.01	.09	.05
Net Profit	$ .02	$ .73	$ .44
Net Loss	.04	.70	.36

Lignite mines, Group "B," Divisions 8 and 9, Drumheller and Ardley.

1924

ITEM—	Minimum of Mines Showing This Item	Maximum of Mines Showing This Item	Average of Mines Showing This Item
	Per Ton	Per Ton	Per Ton
Underground Labor—Mine Officials	$ .02	$ .14	$ .07
" " Other Employees	1.43	2.50	1.86
Underground—Material and Supplies	.07	.24	.17
Surface Labor—Mine Officials	.07	.26	.15
" " Other Employees	.22	.56	.37
Surface—Material and Supplies	.03	.14	.08
Power Purchased	.06	.10	.08
Cost of your own coal used in colliery	.01	.03	.02
Total underground and surface costs as above	$1.86	$3.64	$2.59
Administration, office and selling expense	.05	.66	.27
Rentals	.03	.13	.08
Royalty—Dominion Government	.04	.05	.05
Royalty	.03	.32	.20
Alberta Government Coal Tax	.04	.05	.05
Other Taxes	.01	.07	.04
Workmen's Compensation	.05	.10	.08
Interest	.01	.10	.04
Insurance	.01	.04	.02
Reserves for Contingencies	....	....	....
Other Reserves	....	....	....
Depreciation	.05	.42	.17
Amortization of Development	.03	.04	.03
Depletion	.05	.10	.09
Miscellaneous	.01	.15	.05
Interest on Adjusted Capital	.10	.26	.17
Total Cost	$2.80	$4.52	$3.60
Value f.o.b. Mine of Merchantable or Disposable Coal produced	$2.90	$4.18	$3.58
Value of Coal used at Colliery	.01	.02	.02
Other Revenue	.01	.25	.09
Total Revenue	$2.91	$4.40	$3.80
Gross Profit	$ .06	$ .88	$ .54
Gross Loss	.02	.50	.30
Government Income Tax	.01	.10	.07
Net Profit	$ .06	$ .78	$ .47
Net Loss	.03	.50	.30

APPENDIX XII

EARNINGS OF MINEWORKERS FOR 1921-1924

See text Chapter VII Section 52 for explanation.

BITUMINOUS MINES.

1921

Men appearing on Pay Rolls for:	No. of Employees	Total Earnings	Average Earnings	Average Earnings Per Employee Per Month	Average Lowest Earnings Per Month	Average Highest Earnings Per Month
12 Months . .	1,493	$3,139,737.27	$2,102.97	$175.25	$ 79.71	$318.05
11½ Months . .	110	222,522.99	2,022.93	175.91	103.70	265.00
11 Months . .	157	272,604.68	1,736.35	157.85	102.20	233.30
10½ Months . .	59	106,444.89	1,804.15	171.82	122.84	237.00
10 Months . .	125	197,780.68	1,582.25	158.22	88.28	266.27
9½ Months . .	46	69,720.62	1,515.67	159.54	114.89	204.62
9 Months . .	90	120,349.47	1,337.22	148.58	115.62	200.95
8½ Months . .	41	54,082.62	1,319.09	155.19	101.94	184.26
8 Months . .	109	130,972.34	1,201.58	150.20	94.31	237.21
7½ Months . .	54	65,016.68	1,204.01	160.54	105.58	204.19
7 Months . .	136	159,397.31	1,172.04	167.43	92.73	255.99
6½ Months . .	35	33,247.60	949.93	146.14	104.61	195.45
6 Months . .	124	122,838.02	990.63	165.10	94.03	227.28
5½ Months . .	47	43,590.45	927.46	168.63	100.89	294.15
5 Months . .	136	107,160.91	787.95	157.59	89.47	247.85
4½ Months . .	92	69,674.74	757.33	168.30	120.23	231.19
4 Months . .	242	136,047.79	562.18	140.54	101.34	226.45
3½ Months . .	107	65,653.11	613.58	175.31	117.78	247.16
3 Months . .	152	62,127.47	408.73	136.24	113.87	214.82
2½ Months . .	53	21,780.54	410.95	164.38	133.91	235.70
2 Months . .	112	29,463.93	263.08	131.54	65.01	296.13
1½ Months . .	48	9,639.08	200.81	133.87	67.02	219.96
1 Month . .	129	11,268.16	87.35	87.35	83.08	233.57
½ Month . .	100	5,307.45	53.07	106.14	56.68	192.82
	3,797	$5,256,428.80	$1,384.36	$167.80	$ 99.95	$251.09

Average number of months worked per employee, 8.25.

EARNINGS OF MINEWORKERS FOR 1921-1924

See text Chapter VII Section 52 for explanation.

BITUMINOUS MINES.

1922

Men appearing on Pay Rolls for:	No. of Employees	Total Earnings	Average Earnings	Average Earnings Per Employee Per Month	Average Lowest Earnings Per Month	Average Highest Earnings Per Month
12 Months . .	88	$229,850.13	$2,611.93	$217.66	$141.67	$375.71
11½ Months . .	3	7,110.61	2,370.20	206.10	206.10	206.10
11 Months . .	11	20,512.96	1,864.81	169.53	149.26	200.44
10½ Months . .	4	8,648.46	2,162.11	205.91	199.39	211.17
10 Months . .	41	80,978.89	1,975.09	197.51	178.10	225.30
9½ Months . .	6	11,871.89	1,978.65	208.28	176.10	217.64
9 Months . .	35	58,568.03	1,673.37	185.93	166.44	224.98
8½ Months . .	12	19,090.57	1,590.88	187.16	154.06	207.06
8 Months . .	116	177,064.04	1,526.41	190.80	142.06	261.46
7½ Months . .	226	336,307.76	1,488.09	198.41	150.20	299.69
7 Months . .	836	1,064,858.52	1,273.75	181.96	109.59	279.96
6½ Months . .	70	78,904.23	1,127.20	173.41	127.76	225.46
6 Months . .	102	108,326.97	1,062.03	177.00	126.51	241.13
5½ Months . .	41	43,449.71	1,059.75	192.72	143.32	211.58
5 Months . .	141	126,203.79	895.06	179.01	108.78	244.64
4½ Months . .	99	90,321.99	912.34	202.74	130.84	234.19
4 Months . .	380	237,629.88	625.34	156.33	105.16	254.66
3½ Months . .	106	65,674.26	619.57	177.02	139.95	240.51
3 Months . .	370	201,286.83	544.02	181.34	140.09	300.32
2½ Months . .	43	20,513.27	477.05	190.82	166.85	215.73
2 Months . .	137	41,773.72	304.92	152.46	102.33	350.57
1½ Months . .	61	11,857.96	194.39	129.60	54.54	217.03
1 Month . .	142	18,309.82	128.94	128.94	50.75	276.22
½ Month . .	65	3,736.43	57.48	114.96	46.50	298.57
	3,135	$3,062,850.72	$976.98	$183.39	$128.02	$238.65

Average number of months worked per employee, 5.33.

EARNINGS OF MINEWORKERS FOR 1921-1924

See text Chapter VII Section 52 for explanation.

BITUMINOUS MINES.

1923

Men appearing on Pay Rolls for:	No. of Employees	Total Earnings	Average Earnings	Average Earnings Per Employee Per Month	Average Lowest Earnings Per Month	Average Highest Earnings Per Month
12 Months . .	1,169	$2,472,919.60	$2,115.42	$176.29	$105.44	$285.33
11½ Months . .	63	122,495.22	1,944.37	169.08	122.94	265.52
11 Months . .	174	329,845.52	1,895.66	172.33	109.64	238.00
10½ Months . .	71	111,698.88	1,573.22	149.83	121.57	200.66
10 Months . .	227	371,041.40	1,634.54	163.45	113.18	222.82
9½ Months . .	60	88,271.37	1,471.19	154.86	127.36	201.34
9 Months . .	156	231,446.66	1,483.64	164.85	120.21	245.46
8½ Months . .	52	68,043.03	1,308.52	153.94	123.44	192.32
8 Months . .	158	213,178.69	1,349.23	168.65	110.32	262.55
7½ Months . .	116	136,358.15	1,175.50	156.73	117.55	230.93
7 Months . .	156	177,812.75	1,139.82	162.83	109.26	261.47
6½ Months . .	66	67,990.62	1,030.16	158.49	132.06	219.74
6 Months . .	202	186,729.10	924.40	154.07	107.42	231.93
5½ Months . .	74	65,389.70	883.64	160.66	127.99	229.72
5 Months . .	188	179,919.72	957.02	191.40	106.39	279.97
4½ Months . .	99	71,907.22	726.34	161.41	124.19	222.63
4 Months . .	150	94,751.00	631.67	157.92	116.76	216.12
3½ Months . .	85	52,455.84	617.13	176.32	145.00	236.77
3 Months . .	157	93,142.02	593.26	197.75	151.76	269.32
2½ Months . .	9	4,798.39	533.15	213.26	157.26	266.28
2 Months . .	77	18,315.83	237.87	118.93	116.86	242.55
1½ Months . .	2	614.37	307.18	204.79	204.79	204.79
1 Month . .	38	3,615.70	95.15	95.15	50.43	156.13
½ Month . .	2	2.20	1.10	2.20	1.00	3.40
	3,551	$5,162,742.98	$1,453.88	$170.05	$118.65	$236.92

Average number of months worked per employee, 8.55.

EARNINGS OF MINEWORKERS FOR 1921-1924

See text Chapter VII Section 52 for explanation.

BITUMINOUS MINES.

1924

Men appearing on Pay Rolls for:	No. of Employees	Total Earnings	Average Earnings	Average Earnings Per Employee Per Month	Average Lowest Earnings Per Month	Average Highest Earnings Per Month
12 Months . .	58	$154,290.11	$2,660.17	$221.68	$160.25	$257.54
11½ Months . .	22	48,866.60	2,221.21	193.15	145.90	271.32
11 Months . .	23	47,935.84	2,084.17	189.47	165.64	217.19
10½ Months . .	11	21,745.85	1,976.89	188.27	171.42	215.74
10 Months . .	27	48,721.38	1,804.49	180.45	150.25	202.64
9½ Months . .	13	20,702.08	1,592.47	167.63	152.39	201.68
9 Months . .	22	38,288.83	1,740.40	193.38	184.47	231.89
8½ Months . .	17	29,367.53	1,727.50	203.24	180.04	256.69
8 Months . .	22	33,145.47	1,506.61	188.33	157.74	241.68
7½ Months . .	16	20,568.19	1,285.51	171.40	143.37	205.17
7 Months . .	14	17,505.19	1,250.37	178.62	147.38	194.68
6½ Months . .	11	12,076.71	1,097.88	168.91	148.76	208.00
6 Months . .	374	360,862.74	964.87	160.81	99.65	243.96
5½ Months . .	45	39,688.82	881.97	160.36	135.37	214.76
5 Months . .	592	523,469.25	884.24	176.85	121.91	247.96
4½ Months . .	39	28,682.57	735.45	163.43	132.63	237.84
4 Months . .	331	273,833.94	827.29	206.82	118.24	277.81
3½ Months . .	360	199,324.54	553.68	158.19	142.30	253.36
3 Months . .	365	195,857.94	536.59	178.86	119.28	250.76
2½ Months . .	26	13,113.50	504.36	201.74	189.01	235.89
2 Months . .	89	30,230.01	339.66	169.83	115.02	252.47
1½ Months . .	30	7,210.27	240.34	160.23	65.47	265.25
1 Month . .	39	4,670.40	119.75	119.75	54.85	251.90
½ Month . .	8	554.18	69.27	138.54	81.25	247.01
	2,554	$2,170,711.94	$849.93	$178.72	$140.02	$237.79

Average number of months worked per employee, 4.76.

EARNINGS OF MINEWORKERS FOR 1921-1924

See text Chapter VII Section 52 for explanation.

LIGNITE MINES

1921

Men appearing on Pay Rolls for:	No. of Employees	Total Earnings	Average Earnings	Average Earnings Per Employee Per Month	Average Lowest Earnings Per Month	Average Highest Earnings Per Month
12 Months . .	960	$1,963,268.18	$2,045.07	$170.42	$100.32	$235.72
11½ Months . .	250	425,140.33	1,700.56	147.87	120.34	186.19
11 Months . .	146	217,654.81	1,490.78	135.53	100.69	184.74
10½ Months . .	57	88,305.90	1,549.23	147.55	109.09	176.40
10 Months . .	101	140,623.66	1,392.31	139.23	104.80	174.37
9½ Months . .	56	68,651.61	1,225.92	129.05	111.89	174.95
9 Months . .	90	111,616.22	1,240.18	137.79	109.76	180.67
8½ Months . .	55	67,101.01	1,220.02	143.53	122.57	195.06
8 Months . .	117	129,697.63	1,108.53	138.57	108.14	187.97
7½ Months . .	53	56,178.14	1,059.96	141.33	141.12	180.08
7 Months . .	123	120,054.17	976.05	139.43	104.32	181.47
6½ Months . .	59	55,513.46	940.91	144.75	124.45	187.10
6 Months . .	114	90,171.51	790.98	131.83	105.86	176.58
5½ Months . .	91	77,611.86	852.88	155.07	127.22	220.02
5 Months . .	187	145,399.10	777.54	155.51	110.62	216.55
4½ Months . .	136	106,738.48	784.84	174.41	136.98	226.77
4 Months . .	166	102,545.68	617.75	154.44	117.29	212.65
3½ Months . .	101	54,766.55	542.24	154.93	132.84	229.96
3 Months . .	184	94,168.67	511.78	170.59	136.06	241.25
2½ Months . .	113	51,164.85	452.79	181.12	161.17	263.64
2 Months . .	170	51,893.81	305.26	152.63	142.46	245.35
1½ Months . .	70	14,602.30	208.60	139.07	78.87	274.47
1 Month . .	104	11.179.17	107.49	107.49	69.29	195.79
½ Month . .	104	5,986.90	52.52	105.04	79.01	208.30
	3,617	$4,250,034.00	$1,175.02	$156.25	$128.60	$214.21

Average number of months worked per employee, 7.52.

EARNINGS OF MINEWORKERS FOR 1921-1924

See text Chapter VII Section 52 for explanation.

LIGNITE MINES

1922

Men appearing on Pay Rolls for:	No. of Employees	Total Earnings	Average Earnings	Average Earnings Per Employee Per Month	Average Lowest Earnings Per Month	Average Highest Earnings Per Month
12 Months . .	262	$500,180.13	$1,909.09	$159.09	$117.17	$217.02
11½ Months . .	22	43,992.13	1,999.64	173.88	140.07	194.42
11 Months . .	48	82,073.18	1,709.86	155.44	119.26	169.38
10½ Months . .	9	13,256.39	1,472.93	140.28	108.14	149.50
10 Months . .	82	120,985.37	1,475.43	147.54	121.18	176.66
9½ Months . .	9	11,905.28	1,322.81	139.24	99.50	167.42
9 Months . .	35	44,864.47	1,281.84	142.42	113.57	161.43
8½ Months . .	15	18,634.07	1,242.27	146.15	119.08	186.70
8 Months . .	240	305,320.00	1,272.17	159.02	117.26	192.43
7½ Months . .	450	531,818.58	1,181.82	157.58	132.79	188.77
7 Months . .	394	456,955.17	1,159.78	165.68	113.05	210.22
6½ Months . .	66	65,931.59	998.96	153.68	133.65	177.61
6 Months . .	150	139,569.02	930.46	155.08	118.94	215.12
5½ Months . .	66	65,247.80	988.60	179.75	130.30	218.67
5 Months . .	170	140,880.07	828.71	165.74	124.78	219.37
4½ Months . .	195	170,064.15	872.12	193.81	139.37	238.92
4 Months . .	563	416,684.22	740.11	185.03	122.79	274.06
3½ Months . .	176	111,660.65	634.43	181.26	134.76	234.48
3 Months . .	420	200,635.91	477.70	159.23	132.37	247.22
2½ Months . .	189	74,027.49	391.68	156.67	142.79	261.59
2 Months . .	172	48,106.49	279.69	139.84	96.50	289.05
1½ Months . .	74	18,964.36	256.27	170.84	140.23	246.08
1 Month . .	106	13,401.82	126.43	126.43	72.02	202.73
½ Month . .	62	3,056.19	49.29	98.58	67.18	180.91
	3,975	$3,598,214.53	$905.21	$163.40	$121.06	$217.81

Average number of months worked per employee, 5.54.

EARNINGS OF MINEWORKERS FOR 1921-1924

See text Chapter VII Section 52 for explanation.

LIGNITE MINES

1923

Men appearing on Pay Rolls for:	No. of Employees	Total Earnings	Average Earnings	Average Earnings Per Employee Per Month	Average Lowest Earnings Per Month	Average Highest Earnings Per Month
12 Months . .	1,243	$2,158,025.05	$1,736.14	$144.68	$ 88.19	$230.79
11½ Months . .	36	52,387.63	1,455.21	126.54	83.72	184.20
11 Months . .	161	216,157.64	1,342.59	122.05	105.43	193.02
10½ Months . .	22	29,752.76	1,352.37	128.79	99.76	152.91
10 Months . .	90	127,447.23	1,416.08	141.61	116.20	192.97
9½ Months . .	23	32,568.65	1,416.03	149.05	130.49	171.52
9 Months . .	176	230,758.85	1,311.13	145.68	99.88	164.66
8½ Months . .	28	33,363.70	1,191.56	140.18	117.61	174.83
8 Months . .	183	204,043.54	1,115.00	139.37	104.91	197.39
7½ Months . .	43	52,263.65	1,215.43	162.05	115.74	186.31
7 Months . .	221	213,287.78	965.10	137.87	104.30	182.80
6½ Months . .	52	53,932.84	1,037.17	159.56	126.17	228.66
6 Months . .	152	127,133.63	836.41	139.40	110.84	187.51
5½ Months . .	69	87,641.28	1,270.16	230.92	138.59	197.25
5 Months . .	227	182,343.55	803.28	161.66	108.21	209.50
4½ Months . .	120	126,755.99	1,056.30	234.73	113.52	228.02
4 Months . .	200	116,049.25	580.25	145.06	113.68	219.36
3½ Months . .	112	58,104.46	518.79	148.23	128.83	224.56
3 Months . .	239	104,718.40	438.15	146.05	117.98	225.37
2½ Months . .	123	56,665.14	460.69	184.28	130.58	247.79
2 Months . .	196	47,559.28	242.65	121.32	98.45	225.34
1½ Months . .	114	19,459.30	170.69	113.80	104.35	225.72
1 Month . .	108	8,846.16	81.91	81.91	53.52	148.22
½ Month . .	44	987.48	22.44	44.88	30.82	146.28
	3,982	$4,340,253.24	$1,088.81	$144.60	$107.34	$200.12

Average number of months worked per employee, 7.53.

EARNINGS OF MINEWORKERS FOR 1921-1924

See text Chapter VII Section 52 for explanation.

LIGNITE MINES

1924

Men appearing on Pay Rolls for:	No. of Employees	Total Earnings	Average Earnings	Average Earnings Per Employee Per Month	Average Lowest Earnings Per Month	Average Highest Earnings Per Month
12 Months . .	311	$496,238.43	$1,595.62	$132.97	$ 93.67	$205.25
11½ Months . .	17	24,705.97	1,453.29	126.37	79.98	182.40
11 Months . .	38	50,613.22	1,331.93	121.08	86.60	156.72
10½ Months . .	15	22,146.52	1,476.43	140.61	102.92	148.88
10 Months . .	20	24,743.77	1,237.19	123.72	97.73	150.57
9½ Months . .	6	8,923.19	1,487.20	156.55	138.84	160.30
9 Months . .	39	45,611.92	1,169.54	129.95	117.40	161.97
8½ Months . .	46	52,997.17	1,152.11	135.54	116.20	173.01
8 Months . .	228	241,426.02	1,058.89	132.36	99.48	168.33
7½ Months . .	13	11,893.48	914.88	121.98	92.30	144.95
7 Months . .	86	79,323.52	922.37	131.77	118.25	175.42
6½ Months . .	30	28,757.83	958.59	147.47	139.96	165.06
6 Months . .	135	110,357.55	817.46	136.24	104.23	175.08
5½ Months . .	290	228,929.86	789.41	143.53	140.00	192.96
5 Months . .	492	354,350.16	720.22	144.04	115.84	200.35
4½ Months . .	177	114,498.88	646.88	143.75	131.67	211.24
4 Months . .	250	155,876.12	623.51	155.88	127.77	206.27
3½ Months . .	157	112,295.88	715.26	204.36	135.49	234.65
3 Months . .	348	174,931.62	502.68	167.56	128.06	258.21
2½ Months . .	110	54,207.19	492.79	197.11	178.91	273.43
2 Months . .	263	71,295.65	271.09	135.54	100.41	252.99
1½ Months . .	160	36,606.15	228.79	152.57	87.78	281.35
1 Month . .	126	15,571.37	123.58	123.58	65.92	200.35
½ Month . .	68	3,554.97	52.28	104.56	78.57	226.30
	3,425	$2,519,856.44	$735.72	$142.58	$128.43	$217.54

Average number of months worked per employee, 5.16.

APPENDIX XIII—BIBLIOGRAPHY

The following is a list of the books and other publications assembled for the purpose of the Commission. A number of these were already in the Provincial Library and were kindly loaned to the Commission. These, as well as publications obtained by the Commission, have been sent to the Provincial Library. Other books were kindly loaned to the Commission and have been returned to the individual owners whose names appear in the list.

No.	Name of Publication	Owner
1	Conservation of Coal in Canada	H. M. E. Evans
2	Future Fuel Supply	Prov. Library
3	Canadian Fuel Supply	do.
4	Fuel Supply of Canada	do.
5	Interim Report Dominion Fuel Board 1923	do.
6	Sketch of Geology and Economic Minerals of Canada	H. M. E. Evans
7	The Edmonton Coal Field	do.
8	Coal Fields of Manitoba, Saskatchewan, Alberta and Eastern British Columbia	do.
9	Power in Alberta	do.
10	Departmnt of Mines—Summary of 1922 Report—Part B.	do.
11	The Formation of Coal	do.
12	Coal Mining Disputes on Vancouver Island	do.
13	Undeveloped Coal Resources of Canada	do.
14	Publications of the Natural Resources Intelligence Service	do.
15 & 16	Monthly Bulletins of Canadian Institute of Mining & Metallurgy, Nos. 131 and 148	Prov. Library
17 to 40	The Labour Gazette, Sept., 1920; March, 1921; Feb., March, June, July and August, 1922; March and August, 1923; Feb., Sept., Nov. and Annual, 1924; Feb., March, April, May, June, July, Sept., Oct., Nov. and Dec., 1925; Feb., 1926	do.
41	The Labour Gazette, Dec., 1918, Nova Scotia Miners' Cost of Living	do.
42	The Labour Gazette, April, 1921, Australia Basic Wage	do.
43	Cost of Living Enquiries, Labour Gazette, March, 1919	do.
44	Prices in Canada and Other Countries 1924	do.
45	Peat, Lignite and Coal	do.
46 to 54	Coal Statistics for Canada, 1923; Jan., Feb., Mar., Apr., May, June, July and Aug., 1924	do.
55	Price List of Government Publications	do.
56	Briquetting of Lignites	do.
57	Rise in Prices and the Cost of Living in Canada, 1900-1914	do.
58	Cost of Living (W. F. O'Connor)	do.
59	Changes in Average Cost in Canada of a Weekly Family Budget since 1913	do.
60	The Fuel Problem (Dr. Camsell)	do.
61	Prices in Canada and Other Countries, 1923	do.
62	Central and District Heating	do.
63	Cost of Living Commission	F. Wheatley
64	Household Cost Accounting in Canada	Prov. Library

No.	Name of Publication	Owner
65	Mining Laws of Canada, 1885	N. C. Pitcher
66	Mining Laws of Canada, 1924	J. T. Stirling
67	Prices in Canada and Other Countries, 1925	Prov. Library
68	Coke as a Household Fuel in Central Canada	do.
69 to 72	Coal Resources of the World, Vols. 1, 2, 3 and Atlas	do.
73	Smoky River Coal Field	do.
74	Royal Commission, 1907	do.
75 to 80	Annual Reports Advisory Council of Scientific and Industrial Research, Alberta (1st to 5th)	do.
81 & 82	Annual Reports on Mineral Resources of Alberta (1st and 2nd)	do.
83	Annual Report on Mineral Resources of Alberta (3rd) (including geology of Drumheller Coal Field, Alberta)	do.
84	Annual Report on Mineral Resources of Alberta (4th) (including Saunders Creek and Nordegg Coal Basins and Occurrence of Iron on Lake, Alberta)	do.
85 to 88	Alberta Mines Branch Reports (Bound) 1899-1912; 1913-1917; 1918-1921; 1922-1923	J. T. Stirling
89 to 95	Alberta Mines Branch Reports, 1916-1922	do.
96 & 97	Alberta Mines Branch Reports, 1923-1924	Prov. Library
98 to 102	Wages and Hours of Labor, Canada, 1901-1920; Sept. 1920-Sept. 1921; 1921-1922; 1921, 1922, 1923; 1920-1924	do.
103	Report of Commission on Unrest in Nova Scotia, 1923	do.
104	Coal Fields and Coal Resources of Canada	do.
105	Gas Producer Trials with Alberta Coals	do.
106	Preparation, Transportation & Combustion of Powdered Coal	do.
107	Fuels and Testing—Investigations 1921	do.
108	Results of Forty-one Steaming Tests Conducted at Ottawa Fuel Testing Station	do.
109	Results of the Investigation of Six Lignite Samples Obtained from Province of Alberta	do.
110	Analyses of Canadian Fuels (Manitoba & Saskatchewan)	do.
111	Analyses of Canadian Fuels (Alberta and Northwest Territories)	do.
112	Analyses of Canadian Fuels (British Columbia and Yukon)	do.
113	Geology of the Foothills Belt	do.
114	Workmen's Compensation Act (Accident Fund) Consolidated to April 10, 1925	do.
115	Workmen's Compensation Act, 1924 Consolidation	do.
116 to 119	Reports of Workmen's Compensation Board, Alberta, 1921-1924	do.
120	Analyses of Alberta Coal	do.
121	Coal Truth Pamphlets	do.
122	Report of Institute Fuel Committee	do.
123	Annual Report Department Public Health, 1922	do.
124	Annual Report Department of Education, 1923	do.
125	Annual Report 1920, Department of Agriculture, Saskatchewan (includes mines)	do.
126	Report on Coal & Power Investigation, Saskatchewan, 1913	do.
127	Report of Bureau of Labor and Industries, Saskatchewan	do.

No.	Name of Publication	Owner
128	The Mines Act, Saskatchewan, 1917	Prov. Library
129	Enquiry into Coal Combine, Winnipeg, 1924	do.
130	Mines, Coal & Petroleum Act, British Columbia, Chapter 159	do.
131	Coal Mines Regulations, British Columbia	do.
132	Bumps & Outbursts of Gas, Bulletin No. 2, 1918, British Columbia	do.
133	Report on Coal Mine Explosions, British Columbia	do.
134	Mines Report, British Columbia, 1923	do.
135	Pictorial Review of British Columbia, 1924	do.
136 to 142	Annual Reports Workmen's Compensation Board, British Columbia, 1917-1923	do.
143	Annual Report of Minister of Mines, British Columbia, 1924	do.
144	The Mines Act, New Brunswick, 1903	do.
145	Mines Report, New Brunswick, 1923	do.
146	Coal Mines Regulation Act, Nova Scotia, 1918	do.
147	Report on Mines, Nova Scotia, 1923	do.
148	The Mines Act, Nova Scotia	do.
149	Report of Provincial Royal Commission, Nova Scotia, 1926	do.
150	U.S. Coal Commission Report, 1923	F. Wheatley
151	Pennsylvania 1918 Mines Report on Bituminous	Prov. Library
152	Pennsylvania 1919-1920 Mines Report on Anthracite	do.
153	Pennsylvania 1923 Report on Bituminous Mining Laws	do.
154	Pennsylvania 1922 Report on Anthracite Mining Laws	do.
155	Report of Giant Power Survey Board, Pennsylvania	do.
156	Illinois 1923 Coal Report	do.
157	Illinois 1924 Directory of Shipping Mines	do.
158	Illinois 1923 General Mining Laws	do.
159	Iowa 1923 Mining Law	do.
160	Iowa Report of State Mine Inspectors	do.
161	Colorado 1921 Coal Mining Laws	do.
162	Colorado 1923 Annual Report Inspector of Coal Mines	do.
163	West Virginia 1921 Mining Law	do.
164	West Virginia 1923 Mines Report	do.
165	Ohio Mining Laws, 1921	do.
166	Ohio 1922 Statistics on Mines and Quarries	do.
167	Utah General Mine Safety Orders	do.
168	Utah Act Industrial Commission and Workmen's Compensation	do.
169 to 171	Utah Reports of Industrial Commission 1920-1922; 1922-1924 (No. 3); 1922-1924 (No. 4)	do.
172	Michigan Mineral Products 1922 and Prior	do.
173	Michigan Catalogue of Publications	do.
174 to 178	Report of United States Coal Commission, 1923, Parts 1 to 5	do.
179 to 183	Prices and Cost of Living (U.S.) Aug. 1924; Oct. 1924; Jan., Feb. and Nov. 1925	do.
184 to 189	Wholesale Prices of Commodities (U.S.) Sept. and Dec., 1924; Jan., Feb., March and April, 1925	do.
190	Compulsory Information on Coal	do.
191	The Coal Miners' Insecurity	do.
192	Bituminous Coal Production Shipments (U.S.) 1912	do.
193	What the Coal Commission Found (U.S.)	do.

No.	Name of Publication	Owner
194	Miners' Wages and the Cost of Coal (U.S.)	N. C. Pitcher
195	Coal Mining Problems in Washington State	Prov. Library
196	The Coal Industry (U.S.), A. T. Shurick	N. C. Pitcher
197	Valuation of Coal Mining Properties in U.S	do.
198 & 199	Federal Monthly Labor Review (U.S.) May and Aug. 1924	Prov. Library
200	Federal Commission Report on Anthracite and Bituminous Coal, June, 1917 (U.S.)	do.
201 & 202	Changes in Cost of Living Reports (U.S.), Nos. 44 and 63	do.
203	Cost of Living Commission 1918 (U.S.)	F. Wheatley
204	Catalogue of Publications, Bureau of Mines (U.S.)	Prov. Library
205	"How to Run Coal" (U.M.W.A. Plan), U.S.	do.
206	Standards of Living (U.S.)	do.
207	Pulverized Fuel Equipment of the Lakeside Station, Milwaukee Electric Railway & Light Co.	do.
208	Lopulco Pulverized Fuel Systems	do.
209	Island Station of St. Paul Gas Light Company	do.
210 to 212	Coal Industry Commission (Gr. Brit.) Vols. 1-3	do.
213	Coal Industry Commission Act 1919 (Gr. Brit.) Interim Report by Cooper, Forgie & Williams	do.
214	Coal Industry Commission Report by Smillie, Hodges, etc. (Gr. Brit.)	do.
215	Coal Industry Commission Interim Report by Sankey, Balfour, Duckham & Royden (Gr. Brit.)	do.
216	Coal Industry Commission Second Stage Reports by Sankey, Money, etc. (Gr. Brit.)	do.
217	Advisory Committee Report (Gr. Brit.)	do.
218	Chartered Accountants' Report (Gr. Brit.)	do.
219	Final Report Coal Conservation Committee (Gr. Brit.)	do.
220	Coal Mines Act (Gr. Brit.) 1911	do.
221	Regulations and Orders under Coal Mines Act (Gr. Brit.) 1911	do.
222	Coal Mines Act (Gr. Brit.) 1919	do.
223	Court of Enquiry on Coal Mining Industry (Gr. Brit.)	do.
224	Terms of Settlement Dispute Coal Mining Industry, 1921 (Gr. Brit.)	do.
225	Workmen's Compensation Act, 1923 (Gr. Brit.)	do.
226	Mines Working Facilities Act, 1923 (Gr. Brit.)	do.
227	Coal Mines Minimum Wage Act, 1912 (Gr. Brit.)	do.
228	Mining Industry Act, 1920 (Gr. Brit.)	do.
229	Coal Mines Regulation (Amend.) Act, 1917 (Gr. Brit.)	do.
230	Mines Department Output and Costs Summaries, 1923 (Gr. Brit.)	do.
231	Report of Committee of the Privy Council for Scientific and Industrial Research (Gr. Brit.) 1924-1925	do.
232	Laws of Mines, Quarries and Minerals (MacSwinney)	Alta. Law Society
233	Statement showing Basis of Increase in Cost of Coal to Consumer by 6s. per ton (Gr. Brit.)	Prov. Library

No.	Name of Publication	Owner
234	Wages Agreement 18th June, 1924, Mining Association and Miners' Federation (Gr. Brit.)	Prov. Library
235	National Wages Board, Central Wages Board, Railway Councils (Gr. Brit.)	do.
236	National Wages Board Claims Nov., 1923 (Gr. Brit.)	do.
237	Railways Act, 1921 (National Wages Board Part IV), (Gr. Brit.)	do.
238 & 239	Railway Rates Tribunal Annual Reports 1st and 2nd (Gr. Brit.)	do.
240	Memorandum re Terms of Mining Leases in Scotland	do.
241	Sample Lease (Scotland)	do.
242	General Mining Regulations (France)	do.
243	Mining Legislation (France)	do.
244	Conditions of Work (France)	do.
245	Decree (France)	do.
246	Memorandum re General Mining Law as Affecting Coal and Lignite (Germany)	do.
247	Memorandum re Sale and Leasing of Coal Lands in South Africa	do.
248	Mining Regulations (Belgium)	do.
249	"La Belgique"	do.
250	The Mining Acts and Regulations, Queensland (Australia)	do.
251	Act to Amend The Mining Act of 1898, Queensland (Australia)	do.
252	Act to Amend The Mines Regulation Act of 1910, Queensland (Australia)	do.
253	Coal Mines Reg. Act No. 37, New South Wales (Australia)	do.
254	The Mining Act 1906 New South Wales (Australia)	do.
255	Mining Lease of Private Lands, New South Wales (Australia)	do.
256	Memo. re Sale and Leasing of Coal Lands, New South Wales (Australia)	do.
257	Notes on discussion re Arbitration Act, New South Wales (Australia)	do.
258	Memorandum re Coal Leases (New Zealand)	do.
259	Geology Along the Blackstone, Brazeau and Pembina Rivers	do.
260	The Adjustment of Wages	do.
261	Water Power of Manitoba, Saskatchewan and Alberta	H. M. E. Evans
262	Gas and Oil, Alberta, Saskatchewan and Manitoba	do.
263	Mining Law, Nigeria	J. T. Stirling
264	Mining Law, British Columbia	do.
265	Mining Law, Australia	do.
266	Colliery Manager's Handbook, Pamely	N. C. Pitcher
267	"Coal," Moore	do.
268	Special Rules for the Installation and Use of Electricity	Prov. Library
269	Railway Freight Tariffs on Coal	do.
270	Minutes of Standard Size Committee, Alberta	do.
271	Report Alberta Coal Mining Industry, 1919	do.
272	Canada—General Atlas	H. M. E. Evans
273	Alberta Coal Resources Maps	Prov. Library
274	Canada Coal Supply Map, 1912-1922	do.

1917
1918
1919
1920
1921
1922
1923
1924
1925
1926
1927
1928
1929
1930
1931
1932
1933
1934
1935
1936
1937
1938
1939
1940
1941
1942
1943
1944
1945
1946
1947
1948
1949
1950
1951
1952
1953
1954
1955
1956
1957

ALBERTA COAL COMMISSION—PLATE II.

Charts of Coal Shipments and Coal Production by Months, 1917-1925.

CHART Nº 1. CONSUMPTION OF COAL IN ALBERTA.

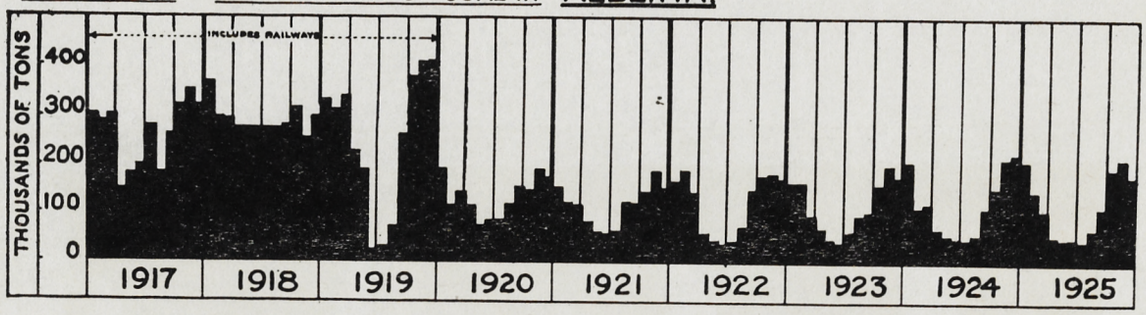


CHART Nº 2. SHIPMENTS TO RAILWAYS.

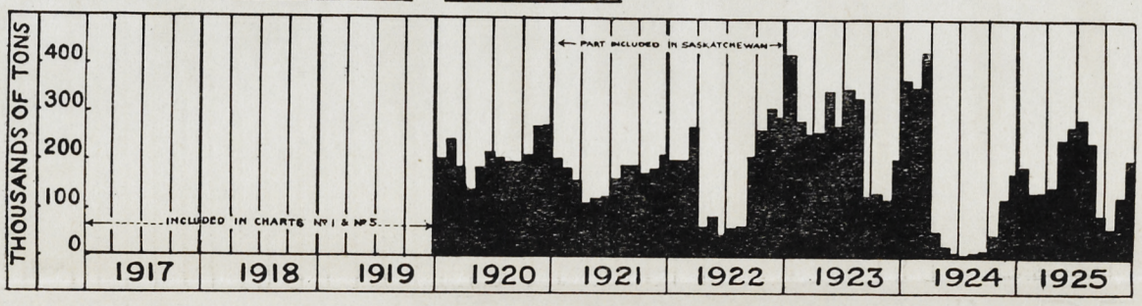


CHART Nº 3. CONSUMPTION OF COAL BY COLLIERY BOILERS.

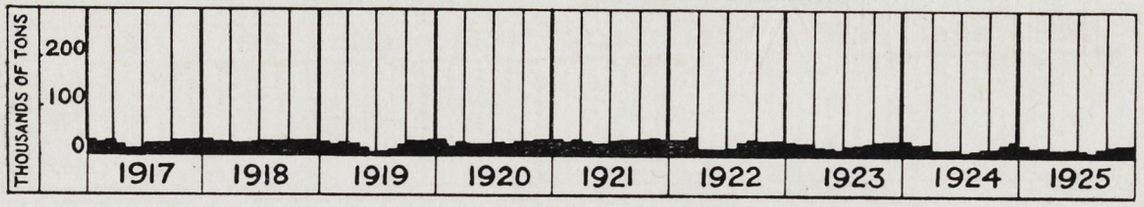


CHART Nº 4. SHIPMENTS TO BRITISH COLUMBIA.

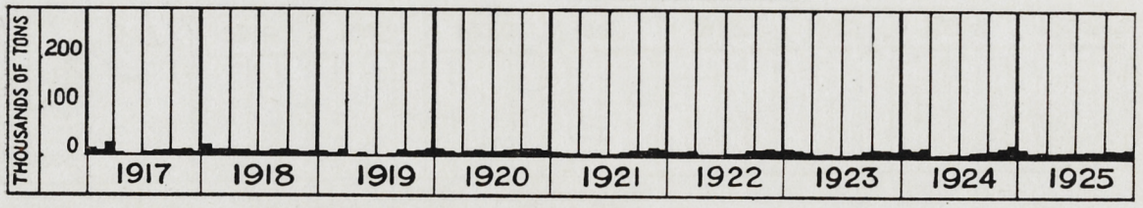


CHART Nº 5. SHIPMENTS TO SASKATCHEWAN.

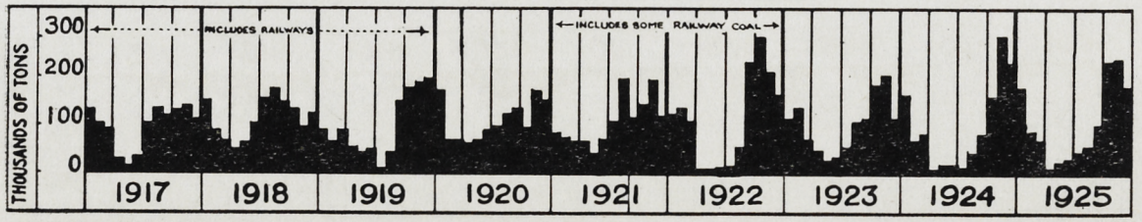


CHART Nº 5. SHIPMENTS TO SASKATCHEWAN.

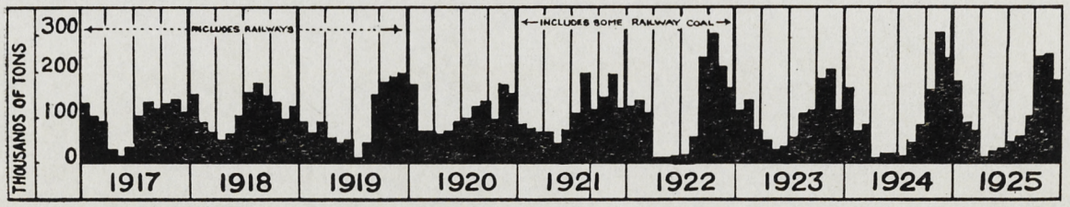


CHART Nº 6. SHIPMENTS TO MANITOBA.

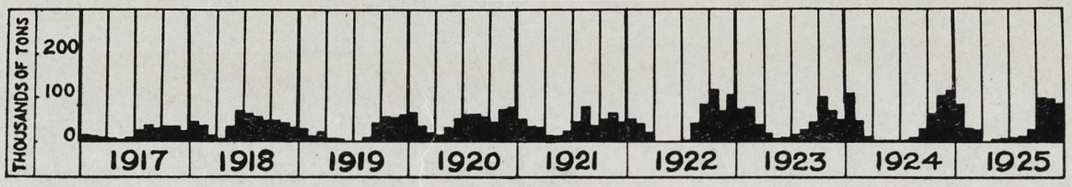


CHART Nº 7. SHIPMENTS TO ONTARIO.

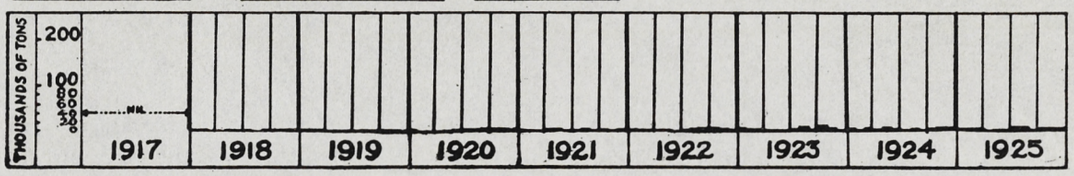


CHART Nº 8. SHIPMENTS TO UNITED STATES.

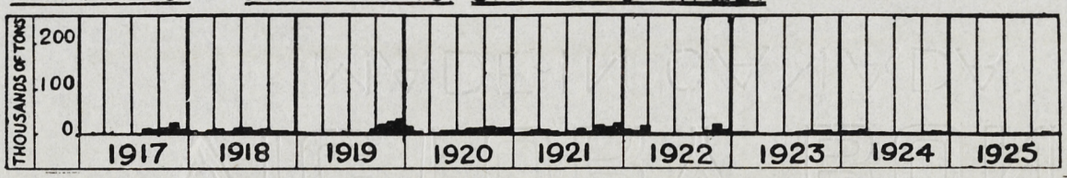
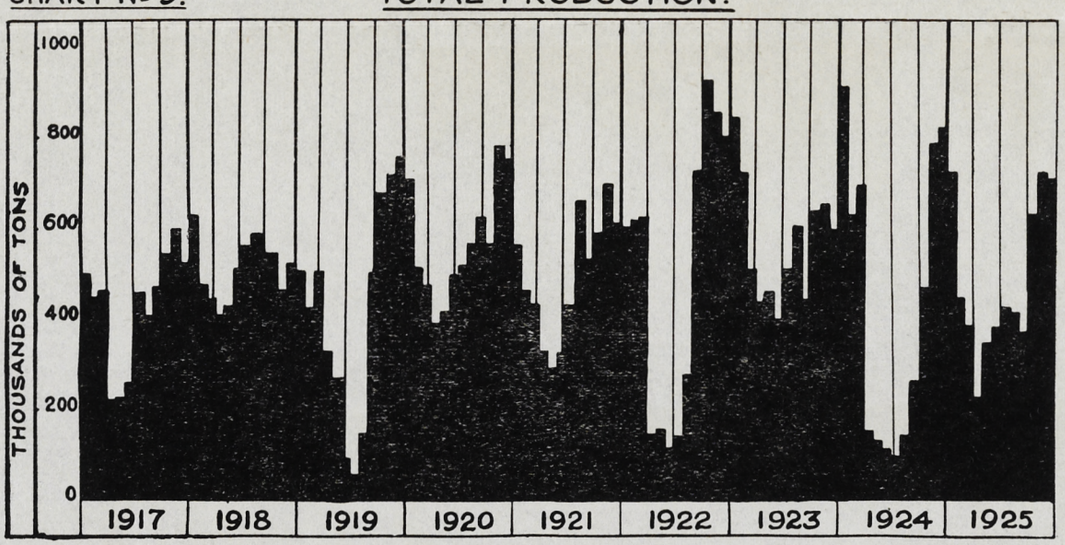
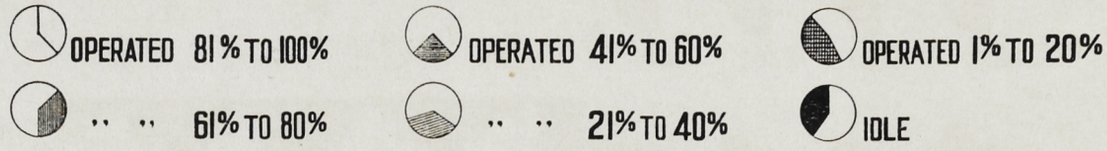


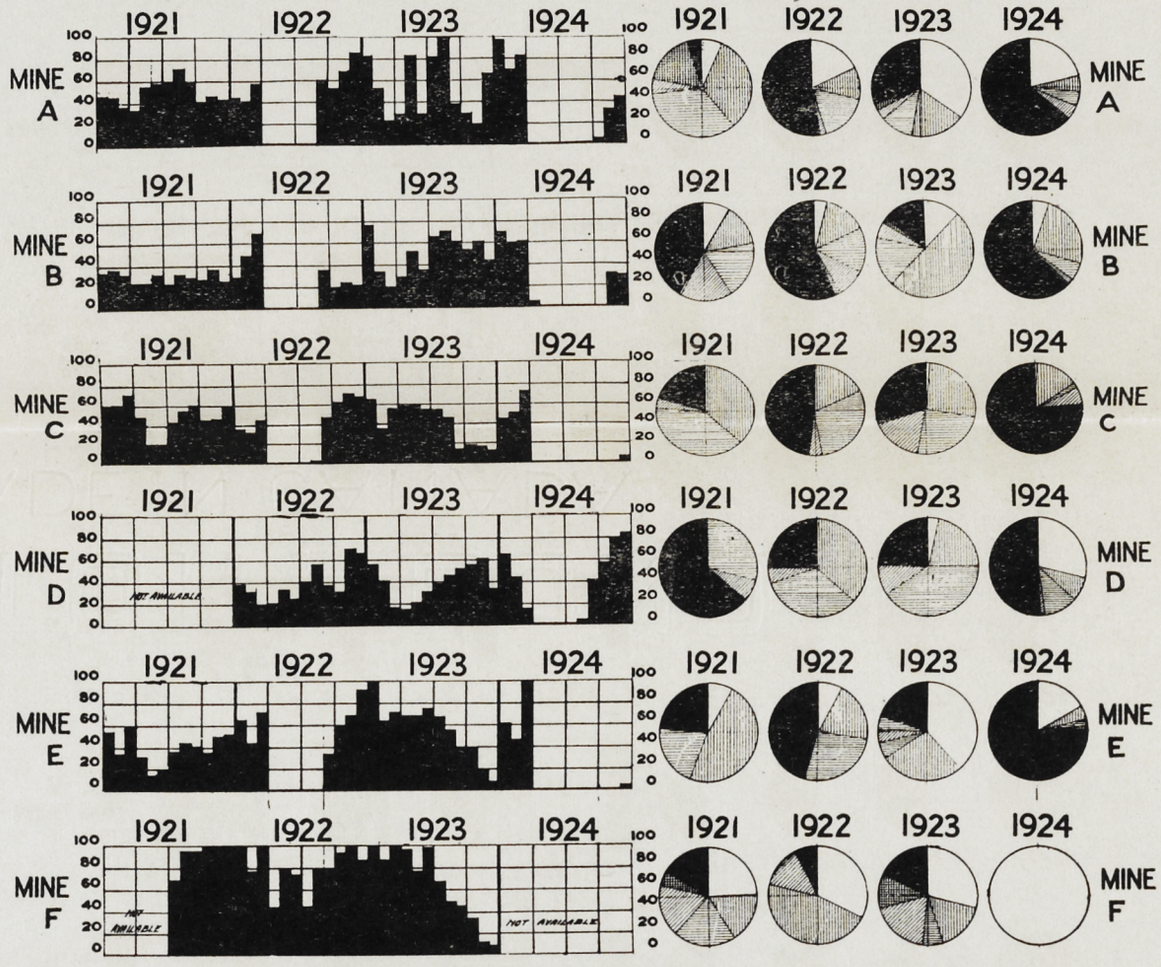
CHART Nº 9. TOTAL PRODUCTION.



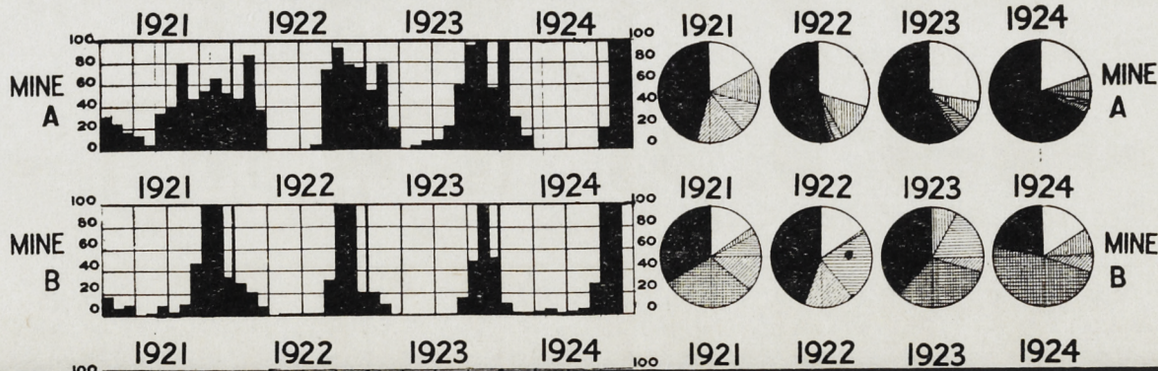
The left half of the chart shows, for typical mines designated by letters and situated in the divisions indicated, the monthly output for the years 1921-1924, as percentages of full estimated capacity. The figures up each margin of this part of the chart are the scale of percentages. The circles in the right half of the chart show, for the same mines and the same years, the division of the whole year into idle time and operation at the various percentages of full capacity, as indicated by the key to the hatchings.

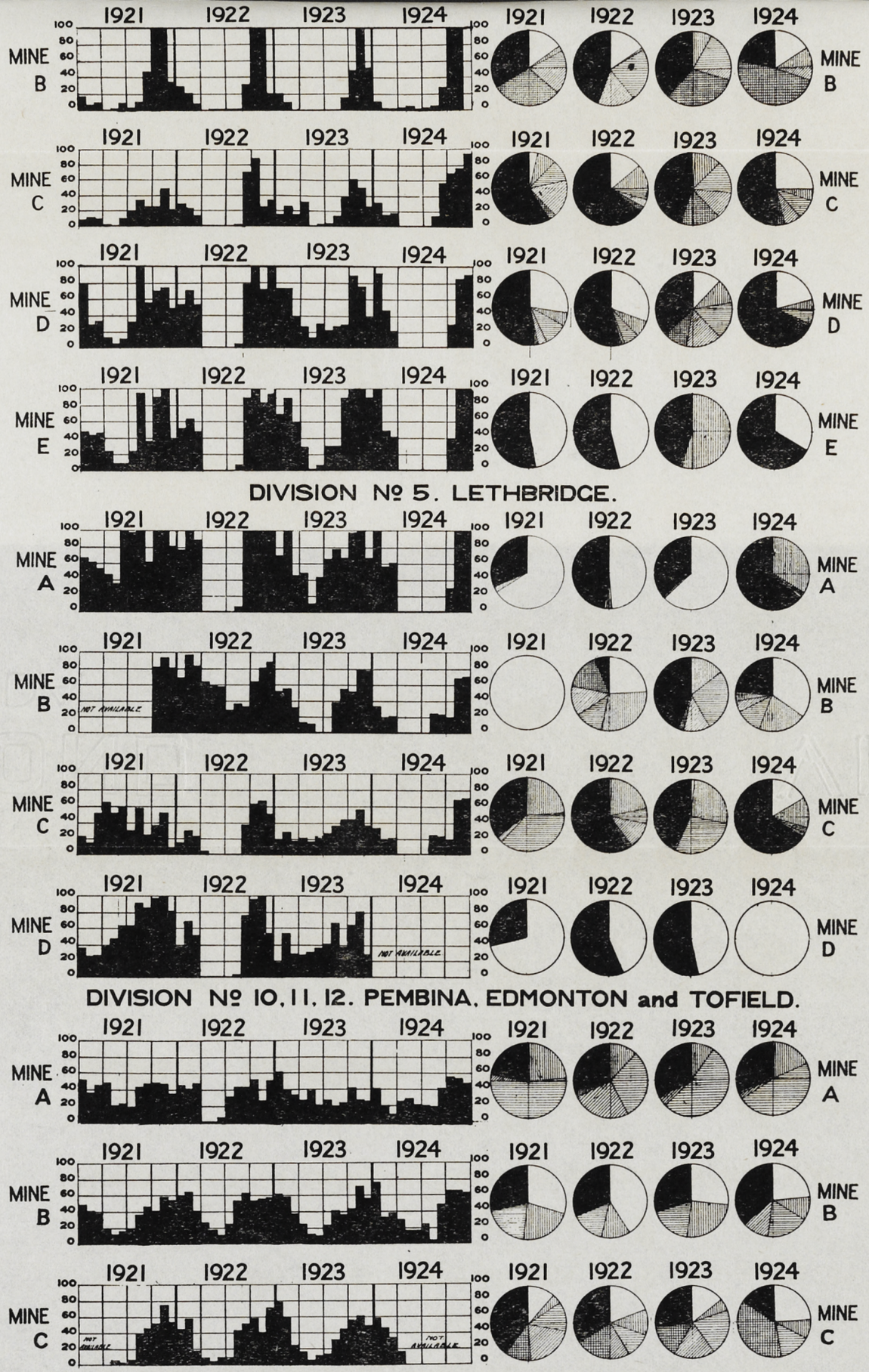


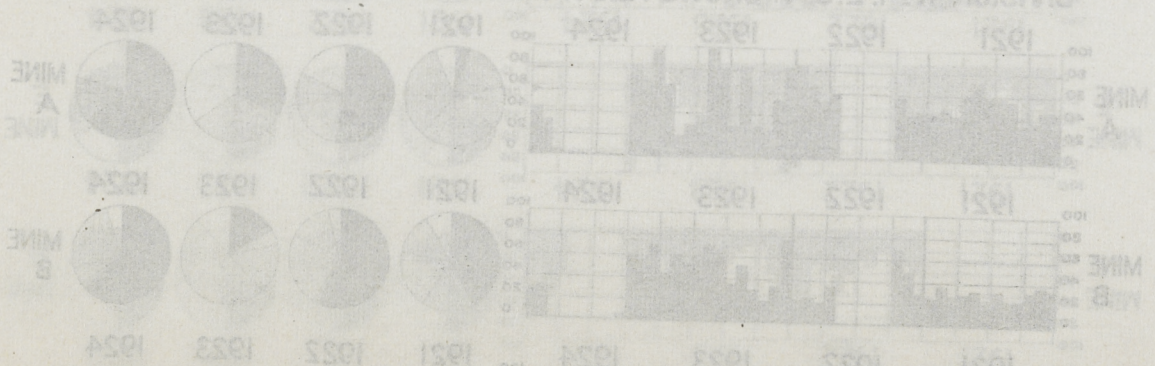
DIVISION Nº 1. 2. 3. 4. CROWS NEST. CANMORE. BRAZEAU. MOUNTAIN PARK.



DIVISION Nº 8. DRUMHELLER.




1921
1922
1923
1924
MINE B
MINE C
MINE D
MINE E
DIVISION Nº 5. LETHBRIDGE.
MINE A
MINE B
NOT AVAILABLE
MINE C
MINE D
NOT AVAILABLE
DIVISION Nº 10, 11, 12. PEMBINA, EDMONTON and TOFIELD.
MINE A
MINE B
MINE C
NOT AVAILABLE
NOT AVAILABLE


1921
1922
1923
1924
MINE A
MINE B

INDEX

	Table	Page
A		
Abandoned Mines	9-11	42-45
Absenteeism	...	85, 232
Access to Mines, Means of	19	62
Accident Prevention Committee	...	295
Accidents, *see also* Workmen's Compensation Board	128	84, 307
Accidents, Increase in	...	308
Accidents, Notice of	...	290, 294
Acknowledgements	...	25
Agreements, Check-off Clause	...	203-205
" Discussion of	...	206-208 217-220
" History of Negotiation of	...	197-201
" Machinery for Adjusting Disputes	116	269
" Management of Mine Clause	...	202, 203
" Present	...	201 et seq.
" Northern Alberta Coal Operators' Assoc. and Edmonton & District Miners' Federation	...	215
" Strikes over Main	...	270-273
" Western Canada Coal Operators' Association and District 18, U.M.W. of A.	...	195
" Variations in	...	215-217
Alabama, Days Worked	117	270
Alberta, *see* Individual Subjects		
Alberta Block Coal Co., Drumheller	...	202
Alberta Coals, Classification of	2	28
Alberta Coal Branch, Living and Housing Conditions	...	261
Alberta, Coal Consumption in	75	118
Alberta Coal Industry, Summary of Financial Results	...	114-116
Alberta Coal Reserves	4, 5, 6, 7	32-35 37-39
Alberta, Market in	...	130-132
Alberta Mines Act, *see* Mines Act		
Alberta Mines Branch	...	283-286
Alberta Mines, Numbers Employed in	88	178
Alberta Workmen's Compensation Schedule, *see also* Workmen's Compensation Act	122, 123	301, 303
Allan, Dr. John A.	...	26, 27, 29, 32, 33, 35, 36
Ambulances, etc.	...	278
Analyses of Coal	...	29, 30
Anthracite Coal, Consumption by Provinces	75	118
Anthracite Coal, Imports	74, 76	118, 119
Anthracite Mines Abandoned	9	42
Anthracite Mines, Output	12	47
Anti-Dumping Provisions	...	321, 322
Ardley Coal Area—Division No. 9, *see* Coal Areas		
Ardley Division No. 9, *see* Coal Mining Divisions		
Arkansas, Days Worked	117	270
Armstrong, W. H.	...	195, 198, 217, 221
Asiatic Countries, Coal Resources	3	31
Assessments, Workmen's Compensation Board	...	288
Atlas Coal Co., Ltd.	...	202
Atlas Local, Summary of Conditions	...	261
Australia, Coal Resources	3	31

	Table	Page
B		
Belgium, Days Worked	32	82
Bellevue Mine	...	200
Belly River Coal Horizon	...	26, 29
Beverly, Living and Housing Conditions	...	261
Big Valley Coal Area—Division No. 8, *see* Coal Areas.		
Bituminous Coal, Analysis and Calorific Value	2	28
" " Consumption by Provinces	75	118
" " Imports	74, 76	118, 119
" " Reserves	5, 6	33, 35
Bituminous Mines, Abandoned	9, 10, 11	42, 43, 44
" " Capacity	16	57
" " Capitalization	33	92
" " Costs (App. XI)		
" " Earnings of Employees (App. XII)	106	246-250
" " Investment per ton	64	110
" " Mine Timber	23, 24	68-70
" " Operation Percentages of Capacity	30	77, 78
" " Operation, Days Worked and Idle	103-105	236-238
" " Output	12, 18	46, 59
" " Output, Causes of Lessened	...	83-85
" " Prices of Coal	57	107
" " Production per Employee	27	75
" " Profits and Losses (App. XI.)	38-40, 65	97, 98, 111, 114, 115
" " Sales in Alberta	80	131
" " " British Columbia	82	133-134
" " " Manitoba	84	140
" " " Ontario	85	149
" " " to Railways	77	120
" " " in Saskatchewan	81	132
" " " in U.S.A.	83	137
" " Tenure of Coal Rights	14	54
" " " " Surface Rights	15	56
" " U.S.A., Comparison with	71	112, 113
Bow Island Gas Field	...	172
Bow River Forestry Division	26	72
Brazeau Collieries	...	200, 202, 205, 207-211
Brazeau Division No. 3, *see* Coal Mining Divisions		
Brazeau Forestry Division	26	72
Briquettes	...	144
Briquetting	...	176
British Coal Competition	...	170
British Coal Imports	...	153
British Columbia, Consumption of Coal	75	118, 134
" " Market in	82	133-137
" " Mines Act	...	232, 279, 282
" " Miners' Association	...	205
" " Wage Scale	101	221
" " Workmen's Compensation	123	303
Brooks Coal Area—Division No. 7, *see* Coal Areas		
Brooks Division No. 7, *see* Coal Mining Divisions		
Brule Coal Area—Division No. 4, *see* Coal Areas		
Budgets, Cost of Living	112-114	254-258
Bush Mine Coal Co., Ltd.	...	215
By-Products	...	175, 176
C		
Cadomin Coal Co., Ltd.	...	202, 203, 205 207-211
Calorific Values of Alberta Coals	2	28, 30
Campbell Commission	...	162

	Table	Page
Camrose Coal Area—Division No. 12, *see* Coal Areas.		
Canada, Coal Consumption in	72-75	117, 118
" Coal Imports	76	119
" Coal Resources	3	31
Canadian Government Railways	...	184
Canadian National Railways	...	49, 50, 52, 53, 73, 120-123, 127, 129, 130, 135, 136, 150, 154
Canadian Pacific Railway, Control of Coal Resources	7	36, 37-39, 40, 48, 51, 52, 120-123, 127, 129, 130, 135, 136, 184, 329, 331
Canadian Railway Board of Adjustment	...	271
Canadian Western Natural Gas, Light, Heat & Power Co.	...	172
Canmore Coal Co., Ltd.	...	200, 202-205, 208, 209, 211
Canmore Division No. 2, *see* Coal Mining Divisions		
Canmore, Living and Housing Conditions	...	260
Capacity of Alberta Mines	16	57
Capitalization	...	91, 92, 113
Capitalization and Profits and Losses	...	89-116
Carbon Coal Area—Division No. 8, *see* Coal Areas		
Carbon Coal Area, Variations in Grade of Seams	...	29
Carbonization	...	175, 176
Cascade Coal Area—Division No. 2, *see* Coal Areas		
Castor Coal Area—Division No. 9, *see* Coal Areas		
Caveling System	...	234, 235
Certificate of Competency	...	282
Certificates, Provisional	...	275, 276
Chairman's Questionnaire	...	89, 90
Champion Coal Area—Division No. 7, *see* Coal Areas		
Chard, Mr. A.	...	156
Check Weighman	...	276, 277
Chief Inspector of Mines	...	285, 286
China, Coal Resources	3	31
Claims, *see* Workmen's Compensation Board		
Classification of Alberta Coals	2	28
Classification of Mine Workmen in Alberta	96	182
Clearwater Coal Area—Division No. 3, *see* Coal Areas.		
Clearwater Coal Area, its Omission	...	33
Clearwater Forestry Division	26	72
Climatic Conditions	...	62, 84
Closed Camps, Building Sites, Cost of Living in	...	259, 262
Coal Areas of the Province	1	23, 24
For each Area the following are the references by subjects:		
Abandoned Mines	11	43-45
Classification of Coal	2	28
Coal Reserves	5	33-34
Control of Coal Reserves	7	37-39
Development in each Area	...	48-54
Earnings of Employees per Shift	106	246, 247
Mine Timber	24	69-71
Production per Employee	27	75-76
Coal Areas, Explanation of Table 2	...	29
Coal Areas Omitted in Estimate of Reserves	...	33
Coal-bearing rocks, Origin of	...	27
Coal, Classification of	...	27, 28, 29
Coal Consumption, *see* Canada and Provinces		
Coal Cutting Machines	22	66

	Table	Page
Coal Districts, Replacement of	...	23
Coal, Domestic, *see* Lignite	...	27
Coal Horizons	...	26
Coal Imports, *see* Canada and Provinces		
Coal Industry Advisory Council	...	324, 325
Coal, Irregularity in Occurrence	...	27
Coal Mines, *see* Bituminous Mines, Sub-bituminous Mines and Lignite mines		
Coal Mines of Alberta, Summary of Financial Position of	...	114-116
Coal Mining Divisions of the Province	1	23-24
For each Division the following are the references by subjects:		
Abandoned Mines	11	43-45
Capacity of Mines	16	57
Coal Reserves	5	33-34
Coal Rights, Tenure of	14	54-55
Control of Coal Reserves	7	37-39
Development in Each Division	...	48-54
Earnings of Employees per Shift	106	246, 247
Floor Conditions	...	63
Gas Conditions	...	64
Means of Access to Mines	19	62
Methods of Working	20	64
Mine Timber	24	69-71
Nationality of Workmen	92	180
Output of Mines	18	59-61
Production per Employee	27	75-76
Roof Conditions	...	63
Room and Board	110	253
School Facilities	115	264-266
Surface Rights, Tenure of	15	56
Coal, Preparation	...	159, 160
Coal, Quality	...	159, 160
Coal Reserves, *see* Under Alberta and Countries		
Coal Reserves, Ownership	7	36-40
Coal Reserves of the World	3	31
Coal Sales Act, Alberta	...	311, 312
Coal Seams in Alberta, Variation in	...	26
Coal Sellers Co., Ltd.	...	168
Coalspur Coal Area—Division No. 4, *see* Coal Areas		
Coke	...	136, 137, 144, 152, 153, 170, 176, 321
Colorado, Output per man per day	29	77
Colorado, Workmen's Compensation	122	300
Competency, Certificate of	...	282
Competing Fields, Comparison with	...	86-88
Competition in Marketing	...	170-177
Compensation, *see* Workmen's Compensation Board		
Composition of the Working Force	...	178
Conciliation	...	267, 268
Consumers' Preferences	...	160
Contract Men, Method of Payment of	...	227, 228
Contract Miners', Earnings per Shift	...	243-245
Contract Rates, Reduction in	...	210
Contract Rates, Suggestion for Abolishing	...	226, 227
Co-operative Marketing	...	164-170
Coroners' Inquests	...	277, 278
Cost of Living Budgets	112-114	254-258
Costs, Appendix XI.	65-70	108-112
Cost Statements, Explanation of	...	92-95
Costs U.S. Bituminous Mines	71	113
Coughlin, T. J.	...	302
Cretaceous Coal	...	26, 87

	Table	Page
Crowsnest Coal Area—Division No. 1, *see* Coal Areas.		
Crowsnest Pass District, Living and Housing Conditions	...	260
Crowsnest Division No. 1, *see* Coal Mining Divisions..		
Crowsnest Forestry Division	26	72
Crowsnest Wage Scale	101	221
Craig's Coal Co., Ltd.	...	202
Crowsnest Pass Coal Co.	...	200, 201, 203, 205-211
Customs Duty on Coal	...	320, 321
Customs, Sundry Special	...	233

D

Day Men, Earnings of	...	242
Day Wage Schedules	99	211-214
Days Worked, U.S. Coal Commission, Working Time in Union and Non-union States	117	270
Days Worked, Average, United States Anthracite Miners 1901-1918	32	82
Deadwork	...	228, 229
Death, *see* Workmen's Comp. B. & A.	...	290
Demerit Ratings, *see* Workmen's Comp. Bd.	...	288, 295, 296
Departmental Action	...	21
Department of Mines of Province of Alberta	...	322-324
Development in each Division and Coal Area	...	48-54
Disability, *see* Workmen's Comp. Bd.	...	290, 291
Diseases, Industrial	...	294
Disfigurement Allowances	...	290, 291
Disputes, Machinery for Adjusting	116	269
Disputes, Local Settlement of	...	206
Distress Coal	...	145, 163, 164
Districts	...	23
Dividends	...	113
Divisions, Coal Mining, of the Province of Alberta	1	23
Dominion Bureau of Statistics	...	58, 119
Dominion Fuel Board	...	152, 153, 155
Dominion Government, Percentage of Control of Coal Reserves	7	37-39
Dominion Government Grain Commission, Method of Procedure re Financial Statements	...	90
Dominion Government in Relation to Alberta Coal	...	317-322
Dominion Government Weights & Measures Inspection Service	...	233
Dominion Subsidy	...	154, 155, 322
Drumheller Area, Living and Housing Conditions	...	260, 261
Drumheller Coal Area—Division No. 8, *see* Coal Areas		
Drumheller Coal Area, Variations in Grade of Seams.	...	29
Drumheller Division No. 8, *see* Coal Mining Divisions		
Duty on Coal	...	128, 320, 321

E

Earnings, App. XII.	106	242-251
Earnings, Average Weekly, *see* Workmen's Compensation Act and Board	...	291-293
Edmonton Coal Area—Division No. 11, *see* Coal Areas		
Edmonton Coal Horizon	...	26, 29
Edmonton Collieries, Ltd.	...	215
Edmonton & District Miners' Federation	...	193, 214, 215, 242, 257
Edmonton Division No. 11, *see* Coal Mining Divisions .		
Edmonton Area, Living and Housing Conditions	...	261
Education	115	264-267

	Table	Page
Electrification of Railways	...	122
Electrical Regulations	...	283
Elgin Coal Co., Ltd.	...	202
Employment, Irregular and Seasonal	103-105	235-241
Employment, Mineworkers, Numbers Employed	107	251
Empress Coal Area—Division No. 6, *see* Coal Areas		
European Countries, Other, Coal Resources	3	31
Evidence at Sessions	...	24
Excelsior Collieries, Ltd.	...	202
Exemptions under Mines Branch Regulations	...	283

F

Financial Results, *see* Capitalization and Profits and Losses		
Fire Boss	...	279, 280
Flat Rate Basis	...	304, 305
Floor Conditions	...	63
Forestry Branch	...	71
Forest Products Laboratories of Canada	...	74
France, days worked	32	82
Fraser-McKay Coal Co., Ltd.	...	215
Freight Rates on Coal	...	156, 157

G

Galt Mines, Lethbridge	...	200, 202, 205, 208, 209, 211
Gas Conditions	...	64
Gas, Natural, Competition	...	171-174
Gauges, Recording	...	283
Gem Coal Mining Co.	...	202
Geology of Alberta Coal	...	26, 27
Germany, Coal Resources	3	31
Gleichen Coal Area—Division No. 7, *see* Coal Areas		
Great Britain, Days Worked	32	82
" " Coal Resources	3	31
Great West Coal Co., Ltd.	...	202, 215
Green, R. F.	...	195, 198
Greenhill Mine	...	200
Group Insurance	...	310

H

Halcourt Coal Area—Division No. 13, *see* Coal Areas		
Haulage, Horse	...	66
Haulage, Mechanical	21	66
Highwood Coal Area—Division No. 2, *see* Coal Areas		
Hillcrest Collieries	...	200, 201, 205, 207-211
History of Mining Development by Divisions and Coal Areas	...	48-54
Horizons, Geological	2	28
Horses, Condition of	...	66
Hospital Emergency	...	283
Hours Worked, Register of, *see* also Working Conditions	...	275
House Rents	108, 109	252, 253
Housing and Living Conditions	...	25, 259
Housing Recommendations	...	261, 262
Hudson's Bay Company, Percentage of Control of Coal Reserves	7	36-39
Hudson's Bay Policy re Coal Rights	...	331
Humberstone Mines, Ltd.	...	215
Hydro-Electric Power, Competition	...	142, 171
Hy-Grade Coal Co.	...	202

	Table	Page
I		
Illinois, Days Worked	117	270
" Output per Man per Day	29	77
" Wage Scale, Day Rate	101	221
" Workmen's Compensation	122	300
India, Coal Resources	3	31
Indiana, Wage Scale, Day Rate	101	221
" Days Worked	117	270
" Workmen's Compensation	122	300
Industrial Arbitration Act, N.S.W.	...	90, 91
Industrial Disputes Investigation Act	...	320
Industrial Research Council, *see* Scientific and Industrial Research Council		
Industrial Workers of the World	...	194
Inspection Committee, Workmen's	...	278, 279
Inspectors, Mines	...	277, 283-286
Inspectors, Work of, British Columbia and Alberta	...	284
International Coal & Coke Co.	...	200, 201, 203, 205, 206, 208-210
International Geological Congress	...	31
Investment, per ton	64	110
Iowa, Days Worked	117	270
" Wage Scale	101	221
" Workmen's Compensation	122	300
J		
Jewel Collieries, Ltd	...	202
K		
Kansas, Days Worked	117	270
Kentucky, Days Worked	117	270
" S.E. Wage Scale	101	221
" Workmen's Compensation	122	300
Kootenay Coal Horizon	...	26, 29
L		
Labor Commissioner of Alberta	...	238-240, 242, 316, 317
Labor Disputes, *see* also Strikes	...	85
Labor Exchanges	...	238, 239
Labor, Hours of	...	275
Labor, Lack of	...	84
Labor Organizations	...	189-194
Labor Situation in Alberta, General	...	238, 239
Labor Turnover	...	85, 235
Lamps	...	233, 278
Legislation	...	274-282
Legislative Action	...	21
Lemieux Act, The	...	272
Lethbridge Coal Area—Division No. 5, *see* Coal Areas		
Lethbridge District, Living and Housing Conditions	...	260
Lethbridge Division No. 5, *see* Coal Mining Divisions		
Lignite Coal, Analysis and Calorific Value	2	28
" " Consumption by Provinces	75	118
" " Reserves	5, 6	34, 35
" Mines Abandoned	9, 10, 11	42, 43, 44, 45
" " Capacity	16	57, 83
" " Capitalization	33	92, 110
" " Costs, Appendix XI.		

	Table	Page
Lignite Mines, Earnings of Employees, App. XII.	106	246, 247, 250
" " Mine Timber	23, 24	68-71
" " Operation Percentages of Full Capacity.	30	78-81
" " Days Worked and Idle	103-105	236-238
" " Output	12, 18	47, 60-61
" " Output, Causes of Lessened	...	83-85
" " Prices of Coal	59-63	107
" " Production per Employee	27	76
" " Profits and Losses, App. XI.	43, 44, 45-56, 66-69	100-106, 111,112
" " Sales, Alberta	80	131
" " " British Columbia	82	134
" " " Manitoba	84	140
" " " Ontario	85	149
" " " Saskatchewan	81	132
" " " U. S. A.	83	137
" " Tenure of Coal Rights	14	54
" " " Surface Rights	15	56
Living and Housing Conditions	...	25, 259-261
Loaders, Mechanical	...	67, 68
Local Disputes, Settlement of	...	206
Longwall System	20	64
Luscar Collieries, Ltd.	...	201, 202, 203, 205, 207-211

M

Machines, Coal Cutting	22	66
Magrath Coal Area—Division No. 5, *see* Coal Areas		
Management of Mine Clause	...	202, 203
Man Trips	...	230, 231
Manitoba, Consumption of Coal	75	118
" Market	84	140-149
" Workmen's Compensation	123	303
Marcus Coal Mines, Ltd.	...	215
Market, Alberta	80	130-132
" in British Columbia	82	133-137
" " Manitoba	84	140-149
" " Ontario	85	149-156
" Railways	77-79	120-130
" " Station Coal	...	130
" in Saskatchewan	81	132, 133
" " U. S. A.	83	137-140
Marketing	...	117
" Summer	...	159
" Methods in General	...	158
Markets, General Survey of, Plate II.	...	119
Maryland, Days Worked	117	270
McGillivray Creek Coal & Coke Co.	...	200, 201, 203, 205-211
Mechanical Loaders	...	67, 68
Mechanical Picks	...	66
Medical Aid	...	294
Medicine Hat Division No. 6, *see* Coal Mining Divisions		
Methods of Work	20	64
Michigan Wage Scale	101	221
Midland Coal Co., Ltd.	...	202
Mid-West Collieries, Ltd.	...	202
Milk River Coal Area—Division No. 5, *see* Coal Areas		
Mine Disability	...	85
Mine Owners' Tax Act, Alberta and Other Alberta Acts	...	311, 312, 313
Miners, Contract, *see* Contract Mines		
Miners' Federation of Great Britain	...	335
Mines, Abandoned	9, 10, 11	42-45

	Table	Page
Mines Act of the Province of Alberta, The	...	274-282
Mines, Amalgamation of	...	333-335
" Analysis by Output	12, 13	46-48
Mines Branch	...	283-286
" " Returns and Reports	...	27
" Capacity	16	57
" Capitalization	33	92
" Mine Timber	23, 24	68-71
" Operation Percentages of Capacity	30, 31	77-82
" " Days Worked and Idle, Chart III.	103-105	236-238
" " Suggestions for Improvement in	...	88
" Output	12, 18	46-48, 59-61
" " Causes of Lessened	...	83-86
" All, Production per Employee	27	76
" Profits and Losses	...	95-106, 110-116
" Record by Numbers	8	41
" Small	...	332-333
Mine Workers' Unions, Cost of Living Budget	113	257
" " " House Rents, Report of	108	252
" " " Room and Board, Report of	110	253
" " of Canada	...	193, 270
Mine Workmen	...	179
" " Classification of	96	182
" " Earnings, App. XII.	106	246-250
" " Family Budget	112-114	255-258
" " Nationality	92-94	180, 181
" " Numbers of	89-91, 107	179, 251
" " Surplus of	...	182, 183
Minimum Rate	...	209
Mining, Development and Output	...	41
" Practice	...	86
" Regulations	...	317-320
Missouri, Days Worked	117	270
Montana Market	...	139
" Output per Employee per Day	29, 122	77, 301
" Wage Scale	101	221
" Workmen's Compensation	122	301
Monthly Returns by Operators	...	277
Morley Coal Area—Division No. 2, *see* Coal Areas		
Mountain Park Coal Area—Division No. 4, *see* Coal Areas		
Mountain Park Collieries	...	202, 203, 205, 207-210
Mountain Park Division No. 4, *see* Coal Mining Divisions		
Multiple Shifts	...	230

N

Nationality of Mine Workmen	92-95	179-181
Nationalization of Mines	...	272, 335, 336
Natural Conditions	...	62, 63, 64
Natural Gas	...	171-174
New Brunswick, Coal Consumption in	75	118
" " Workmen's Compensation	123	303
Newcastle Coal Co.	...	202
New Mexico, Days Worked	117	270
New Work	...	208
Non-Union Workmen	...	194
" " Wage and Working Conditions	...	220
Nordegg Coal Area—Division No. 3, *see* Coal Areas		
" Living and Housing Conditions	...	261
Northern Alberta Coal Operators' Association	...	188, 189, 215

	Table	Page
North Dakota Market	...	139
" " Output per Employee	29	77
" " Workmen's Compensation	122	301
Northwestern Utilities, Ltd.	...	172
Nova Scotia, Consumption of Coal	75	118
" " Wage Scale	101	221
" " Workmen's Compensation	123	303
Numbers Employed in Alberta Mines	88	178

O

Ohio, Days Worked	117	270
" Wage Scale	101	221
" Workmen's Compensation	122	300
Oil Consumption on Locomotives	...	122, 174
Oklahoma, Days Worked	117	270
Old Man Coal Area—Division No. 1, *see* Coal Areas		
One Big Union	...	194
Ontario Central, Coal Consumption	75	118
" Market	85	149-156
" Workmen's Compensation	123	303
Operating Companies, Percentages of Control of Coal Reserves	7	37-39
Operating Conditions and Practice	...	62
" " Comparison with Competing Fields	...	86-88
Operation, Days of Full	103	236
" Days Idle	104	236, 237
Operators' Organizations	...	184-188
Operation Short Time, Plate III.	30-32, 105	77-83, 238
Orders, Lack of	...	84
Output, Causes of Lessened	...	83-85
" of Mines, App. II.	12, 17, 18	46, 48-54, 58-61
Output per Employee per Shift	27-29	75-77
Over-crowding	...	231
Over-development	...	327-332
Overtime	...	209
Ownership of Coal Resources	7	36-39

P

Pakan Coal Area—Division No. 12, *see* Coal Areas		
Pakowki Coal Area—Division No. 6, *see* Coal Areas		
Panther Coal Area—Division No. 3, *see* Coal Areas		
Panther Coal Area, Its Omission from Table 5	...	33
Payment Fortnightly	...	276
Pay-rolls	119	295
Peace River Division No. 13, *see* Coal Mining Divisions		
Pekisko Coal Area—Division No. 2, *see* Coal Areas		
Pembina Coal Area—Division No. 10, *see* Coal Areas		
Pembina Division No. 10, *see* Coal Mining Divisions		
Penn Mine Coal Co., Ltd.	...	215
Pennsylvania	117	270
" Wage Scale	101	221
" Workmen's Compensation	122	300
Permanent Coal Commission	...	325
Personnel	...	75
Physical Conditions of Mines, U. S. A., compared to Alberta Mines	...	87
Picks, Mechanical	...	66
Pincher Coal Area—Division No. 1, *see* Coal Areas		
Pit Committee	...	207
Pooling Arrangements	...	166

	Table	Page
Powdered Coal	...	122
Power Stations at Coal Mines	...	174
Prairie Creek Coal Area—Division No. 4, *see* Coal Areas		
Prairie Creek Coal Area, its Omission from Table 5	...	33
Pratt, Mr. George R.	...	141, 145, 146
Preference of Employment	...	209, 210
Prince Edward Island, Coal Consumption in	75	118
Problems, Sundry	...	326, 327
Production per Employee per Shift	27	75, 76
Profits and Losses	34-37	95, 96
" " " Bituminous Mines	38-40	97, 98
" " " Lignite Mines	43-56	100-106
" " " Sub-bituminous Mines	41, 42	98, 99
" " " in U. S. Mines	71	112, 113
Profits per ton	65-70	111, 112
Progress of Mining Development by Years	8	41
Provincial Activities	...	313-317
Provincial Health Service	...	309, 310
Prussia, Days Worked	32	82
Public Health Act, Alberta	...	313
Publications Consulted, App. XIII.		
Publicity	...	89-91, 271, 272
Pulverized Coal	...	174, 175

Q

Quality of Coal	...	159, 160
Quebec, Consumption of Coal	75	118
" Workmen's Compensation	123	303
Questionnaire to Local Unions	...	24
" " Mine Operators, Chairman's	...	24, 89, 90
" " " " General	...	24, 55, 56

R

Railway Association of Canada	...	271
" Cars, Lack of	...	84
" Market	...	120-130
Recommendations, *see* Summary	...	16-19
Redcliff Coal Area—Division No. 6, *see* Coal Areas		
Red Deer Valley Coal Operators' Association	...	187, 192, 202, 206
" " " Miners' Union	...	193
Regulations, Dominion Government Mining	...	317-320
" of the Mines Branch	...	283
" Power to Make	...	280, 287, 288
" of the Workmen's Compensation Board	...	295, 296
Rescue Work, Mine	...	310, 311
Research Council of Alberta, *see* Scientific and Industrial Research Council		
Retailers	...	161-163
Revenues per ton, Appendix XI.	57-63, 65-70	106-112
Rochester Coal Area—Division No. 11, *see* Coal Areas.		
Roof Conditions	...	63
Room and Board	110, 111	253, 254
Room and Pillar System	20	64
Rosedale Area, Summary of Conditions	...	261
Rosedale Coal Mining Co.	...	202, 203
Rosedeer Coal Mining Co.	...	202
Russia, Europe and Asia, Coal Resources	3	31

	Table	Page
S		
Sales, Methods of Handling	...	161-163
Sampling	...	29-31
Sanitation Recommendations	...	263
Sankey Coal Commission	...	90, 274
Saskatchewan, Consumption of Coal in	75	118
" Lignite, Competition with Alberta Coal	...	133, 170
" Lignite, Pool	...	164
" Market in	81	132, 133
" Workmen's Compensation	123	303
Saunders Coal Area—Division No. 3, *see* Coal Areas		
" " Horizon	...	26
School Facilities at Mining Centres	115	264-267
Scientific and Industrial Research Council	...	25, 27, 30, 31, 74, 175-177, 313-316, 323
Seattle Market	...	137, 138
Sessions of Commission	...	24
Sexsmith Coal Area—Division No. 13, *see* Coal Areas		
Sheerness Coal Area—Division No. 8, *see* Coal Areas		
Shifts, Multiple	...	230
Short Time Operation, Plate III.	30-32,105	77-83, 238
Shot Firing	...	280
Smitten, Walter	...	222
Smoky River Coal Area, Its Omission from Table 5	...	33
" " " " —Division No. 4, *see* Coal Areas		
Souris Coal Distributors	...	164-166
" Pool	...	164-166
South Africa, Coal Resources	3	31
" " Collieries	...	166
South America, Miscellaneous Coal Resources	3	31
Spare Link	...	234
Spokane Market	...	138
Stansfield, Mr. Edgar	2	27-29, 175, 176
Steveville Coal Area—Division No. 7, *see* Coal Areas		
Stirling, Mr. John T.	...	42, 43, 75
Storage of Alberta Coals	87	158, 159
Strikes and Conciliation	117	267-273
Stutchbury, Mr. Howard	...	149, 150
Sub-bituminous Coal, Analysis and Calorific Value	2	28
Sub-bituminous Coal Reserves	5, 6	34, 35
Sub-bituminous Mines Abandoned	9, 10, 11	42, 43, 46
" " Capacity	16	57, 83
" " Capitalization	33	92
" " Earnings of Employees	106	246, 247
" " Mine Timber	23, 24	68-70
" " Output	12, 18	46, 60
" " Causes of Lessened Output	...	83-85
" " Prices of Coal	58	107
" " Production per Employee	27	75
" " Profits and Losses	41, 42	98, 99, 115
" " Sales, Alberta	80	131
" " " British Columbia	82	134
" " " Manitoba	84	140
" " " Ontario	85	149
" " " to Railways	77	120
" " " Saskatchewan	81	132
" " " U. S. A.	83	137
" " Tenure of Coal Rights	14	54
" " " Surface Rights	15	56

	Table	Page
T		
Taber Coal Area—Division No. 5, *see* Coal Areas		
Tariff on Coal, Summer	...	157
Tennessee, Eastern, Wage Scale	101	221
Tenure of Coal and Surface Rights	14, 15	54-56
Terms of Reference, Alberta Coal Commission, App. I. .		
Thomas, J. D., Coal Co., Ltd.	...	202
Timber, Mine	23-26	68-74
Timbering	...	280
Tofield Coal Area—Division No. 12, *see* Coal Areas...		
Tofield Division No. 12, *see* Coal Mining Divisions ..		
Town Planning Act	...	263
Trade Commissioner's Office	...	316
Transportation	...	156-158
Turner Valley Field	...	172
U		
U.M.W. of A.	...	124, 183, 187-189, 191-193, 195, 196, 200-204, 217, 218, 227, 230, 242, 255, 257, 258, 269
U.M.W. of A., Cost of Living Budget Comparison	114	258
Union Affiliation and Check-off Clause	...	203-205
United States, Bituminous Mines, Days Worked, 1901-1918	32	82
" " Bituminous Mines, Comparisons with .	...	112
" " Bureau of Mines, Preservative Treatment of Mine Timber	...	74
" " Coal, Competition	...	170
" " Coal Commission	...	21, 36, 67, 82, 87, 109, 112, 113, 183, 219, 220, 232, 235, 241, 270, 271
" " Coal Pools	...	31
" " Coal Resources	3	31
" " Compensation, compared with Province of Alberta	122	300, 301
" " Days Worked	32	82
" " Department of Labor	...	297
" " Figures of Coal Reserves, 1918, by U. S. Geological Survey	...	36
" " Forest Product Laboratories	...	74
" " Market	83	137-140
" " Total Coal Mined to 1918	...	36
" " Wage Scales	101	221
Utah Coals	...	138
" Days Worked	117	270
" Workmen's Compensation	122	301
V		
Value of Annual Coal Output	17	58
Vancouver Island Coals	...	134-136
Ventilation	...	65, 278
Viking Gas Field	...	172
Virginia, Days Worked	117	270
Volatile Matter in Alberta Coals	2	28

	TABLE	PAGE
W		
Wage Agreements, Sundry	...	195, 196
" and Working Conditions, Sundry	...	224
" Changes, 1909 to 1925	98	196, 197
" Differentials	...	215-217
" Scales, Comparisons of, In United States and Canada	101	221
Wages, Bone in Coal	...	233
" Contract Men, Method of Payment of	...	227, 228
" Deadwork	...	228, 229
" Fortnightly, Payment of	...	223, 276
" in excess of General Scale	...	220
" Minimum	...	225, 226
" Mining Elsewhere	...	221
" Multiple Shifts	...	230
" Non-payment of	...	223, 224, 280, 281
" Non-union	...	220
" Other Occupations	102	222
" Schedules of	99, 100	211-214
" Suggestion Abolish Contract Rates	...	226, 227
" Working Conditions and Agreements	...	194
Wainwright Coal Area—Division No. 13, *see* Coal Areas		
Waiting Period	...	288, 289
Wash-houses	...	234, 278, 283
Washington, Wage Scale	101	221
" Workmen's Compensation	122	301
Water Supply Recommendations	...	263
Weekly Earnings, Average	...	291-293
Weight or Measurement, Payment by	...	276
Weights	...	233, 234
" Railway	...	157, 158
West-bound Grain Movement	...	128
West Canadian Colliery	...	201, 203, 205, 208-211
Western Canada Coal Operators' Association	...	46, 184, 187, 188, 190, 191, 195, 196, 201-203, 206-208, 210, 211, 218, 269, 295, 312
Western Commercial Co., Ltd.	...	202
" Virginia, Days Worked	117	270
" " Output per Employee	29	77
" " Splint Coal	...	144
" " Workmen's Compensation	122	300
Wetaskiwin Coal Area—Division No. 12, *see* Coal Areas		
Wet Places	...	210
Whitecourt Coal Area—Division No. 10, *see* Coal Areas		
Wholesalers, Sales Methods	...	161
Working Day, Length of	...	229, 230
Workmen, Inexperienced	...	231, 232
Workmen's Compensation Act (Accident Fund) of the Province of Alberta, The	...	286-295
Workmen's Compensation Act, Compensation Alberta Schedules Compared with Other Provinces	123	303
Workmen's Compensation Act, Compensation, Comparison of Present and Original Act	120	297
Workmen's Compensation Act, Compensation, Maximum	...	293
" " " Compensation, Minimum	...	294
" " " Compensation, Scale of	...	296
" " " Compensation, Scale of, Summary	121	298, 299

	Table	Page
Workmen's Compensation Act, Compensation, Schedules of U.S.A.	122	300, 301
" " " Disability, permanent partial	...	290
" " " Disability, permanent total	...	290
" " " Disability, temporary partial	...	291
" " " Disability, temporary total	...	291
" " " Disfigurement allowance.	...	290, 291
" " " Flat Rate Basis	...	304, 305
" " " Industrial Diseases	...	294
" " " Persons to Whom it Applies	...	294, 295
" " Board	...	286-289
" " " Accidents in Alberta Mines	128	307
" " " Accident Claims	118	289
" " " Administration Expense.	126	306
" " " Assessment Rate to 1925	125	306
" " " Constitution of the	...	286, 287
" " " Earnings	...	242, 250, 251
" " " Financial Results of Schedule 1	124	305
" " " Jurisdiction of the	...	287
" " " Report on Average Earnings	106	246, 247
" " " Statistics	127	306
" " " Various Powers of	...	288
" Inspection Committee, *see* Legislation	...	278, 279
World's Coal Resources, The	3	31
Wood, Competition	...	171
Wyoming, Wage Scale	101	221
" Workmen's Compensation	122	300

Y

Yorath, Mr. C. J.	...	171-173
Young, Mr. R. M., *see* History of Agreements	...	197, 199, 201
Yukon & British Columbia Coal Consumption	75	118

DATE DUE SLIP

DUE CAM OCT 2 8 '89

RETURN

DUE CAM FEB 07 '96

FEB 06 RETURN

DUE CAM SEP 15 '96

RETURN SEP 13 1996

7355

HD 9554 C23 A3 A33 1926 C=2
ALBERTA COAL COMMISSION
REPORT OF ALBERTA COAL
COMMISSION 1925/
39799616 SCI

000016732976

HD 9554 C23 A3 A33 1926 C. 2
Alberta. Coal Commission.
Report of Alberta Coal
Commission, 1925 /
39799616 SCI